CME : 01  "WATER AND ELECTROLYTE HOMEOSTASIS WITH SPECIAL REFERENCE TO
HYPONATRAEMIA"

MANDAKINI RAY
ASST. PROF., PHYSIOLOGY, M.K.C.G. MEDICAL COLLEGE, BERHAMPUR (GANJAM)

Total body water is distributed in a definite proportion in the E.C.F. and I.C.F. compartments. The inorganic salts dissociate into anions and cations when in solution in these fluids. These ions are together called electrolytes. Principal electrolyte is sodium, since it controls E.C.F. volume and blood pressure. The distribution of electrolytes controls the passage of water through the cell walls and maintains acid-base balance in the body.

Sodium and water metabolism are closely interrelated both physiologically and clinically. Water content of the body is maintained by a balance between intake and output. When this balance is disturbed, pure or relative water depletion or intoxication results. The water intake sources are beverages, solid food and endogenous oxidation. The output routes are urine, faeces, skin and the lungs. Total sodium content of the body is also maintained by a balance between the intake and excretion. Excretion of sodium is mainly controlled by kidneys and also by certain hormones. Disturbances in the balance may lead to hypernatraemia or hyponatraemia.

Regarding hyponatraemia, combined deficits of sodium and water are more frequent and may occur due to renal or extra renal losses. Isolated hyponatraemia may occur in a variety of diseases. In some of these it may be associated with E.C.F. volume excess or moderate expansion of E.C.F. volume. The clinical features of hyponatraemia are overshadowed by the manifestations of the underlying illness.

CME : 02  MANAGEMENT OF FLUID AND ELECTROLYTE DISORDER

A.C. MISRA
PROF. MEDICINE, S.C.B. MEDICAL COLLEGE, CUTTACK - 7

Fluid and electrolyte in the body remains in a narrow range in normal persons. Kidney and hormones play a major role in fluid and electrolyte balance. Varieties of clinical conditions result in imbalance of fluid and electrolyte. Diseases such as Congestive cardiac failure, Nephrotic syndrome and Cirrhosis of liver always tend to focus more on the primary disease rather than that of the accompanying disorder of water and sodium. Similarly in situations such as acute Gastroenteritis, Heat exhaustion and Diabetic ketoacidosis the abnormality of fluid & electrolyte is a major cause of the disability. Routine laboratory investigation for electrolyte will help in such conditions for better management. Diuretic therapy with potent drugs. Sodium salts of various drugs in high doses and salt restriction in many clinical conditions, upset the equilibrium of water and electrolyte. The recognition and management of the disorder of fluid and electrolytes is very important. Management strategies included careful drug administration, detailed dietary advice, reliable laboratory investigations which will guide correct therapy for such patients. An alert doctor should keep in mind the various diseases that may result in disorder of fluid and electrolytes. To be successful in treating primary disease as well as the concomitant defect in fluid & electrolytes.

CME : 03  HYPONATRAEMIA

A.C. MAHAKUR,
PROFESSOR AND HEAD, DEPARTMENT OF NEPHROLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK.

Hyponatraemia is defined as a serum sodium of less than 130mEq/L. The incidence and prevalence of hyponatraemia has been reported to be 1% and 2.5% respectively in hospital practice. It is important to remember that not all low serum sodium indicate true hyponatraemia. Laboratory error (anion gap of less than 9), Pseudo hyponatraemia in hyperlipidemia and hyperproteinemia and hyponatraemia due to osmotic shift in hyperglycemic states should be ruled out. A direct (undiluted serum) reading potentiometry by Ion Selective Electrode method gives a true aqueous Serum sodium activity unlike Flame Emission Spectrometer.

The patients of hyponatraemia may be asymptomatic but become symptomatic when serum sodium is less than 125mEq/L. The level of hyponatraemia that may cause symptoms and signs varies with the (a) rate of decline (b) Age and (c) sex. The symptoms are mostly gastrointestinal and neuromuscular. Pseudobulbar Palsy, Seizures, Coma and death may occur.

Clinical examination, assessment of E.C.F. volume status along with estimation of serum and urine osmolality and sodium, blood urea, sugar, protein, lipids and uric acid are helpful aids to clinch the diagnosis. Plasma osmolality is normal in Pseudohyponatraemia and increased in hyperglycemia. A decrease Plasma Osmolality with Urine osmolality of less than 100mOsm/kg. indicates psychogenic polydipsia. Hyponatraemia with volume excess with urine sodium more than 20mEq/L points to advanced renal failure. While Urine sodium less than 20mEq/L indicate C.C.F., cirrhosis, nephrotic state. Hyponatraemia with volume depletion having urine sodium more than 20mEq/L is typical of renal loss but urine sodium less than 20mEq/L points to extrarenal loss. Hypotonic hyponatraemia with normal E.C.F. volume status occurs in two situations (i) primary polydipsia (urine osmolality less than 100mOsm/kg., Urine sodium less than 20mEq/L and (ii) SIADH secretion (urine osmolality more than 100mOsm/kg). and urine sodium more than 20mEq/L.

The management of hyponatraemia includes (i) Prophylaxis, and (ii) therapy. The therapy consists of (a) treatment of cause (b) restriction of water intake (c) administration of drugs - Demeclorhtetracycline, lithium (d) treatment of acute hyponatraemia and (e) treatment of chronic hyponatraemia. While treating acute symptomatic hyponatraemia (a) desired negative water balance (total Body weight x 0.6, acute serum sodium! desired serum sodium x TBW) and (b) Total sodium deficit (desired serum sodium - present serum sodium x TBW (0.6 x Body weight) are helpful guides.

CME : 04 MANAGEMENT OF HYPONATRAEMIA IN PAEDIATRIC PRACTICE
AMIYA CHARAN PARIJA, GADADHAR SARANGI
DEPT. OF PAEDIATRICS, S.C.B. MEDICAL COLLEGE, CUTTACK.

Serum sodium below 130 meq/lit is defined as hyponatraemia. However symptoms develop with sodium less than 120 meq/lit which needs immediate correction irrespective of the aetiology. The serious effects of hyponatraemia reflected on central nervous system, cardiovascular system and renal system. The musculo skeletal effects are minor.

Sodium being the major cation of the ECF, mostly hyponatraemia produces a hypooosmolar state barring pseudohyponatraemia of nephrotic syndrome, where sodium concentration is apparently low and fictitious hyponatraemia of diabetes or mannitol therapy where plasma osmolality is high. Depending upon the ECF component hypotonic hyponatraemia can be hypovolumic due to diseases forming oedema (CCF, Cirrhosis, Nephrotic Syndrome) and acute or chronic renal failure.

Treatment of hyponatraemia depends upon the severity and duration of hypotonic state and the ECF volume. Disease specific therapies are important in desirable circumstances. Any child with significant symptoms or serum sodium less than 120 meq/lit should receive hypertonic saline (3% or 5%) to raise the serum sodium level to 125 meq/lit children with serum sodium more than 120 meq/lit and with mild symptoms should have slow correction over 24 to 48 hours. Subsequent therapy will base on the ECF volume.

Children with hypovolumic hyponatraemia should receive isotonic saline (or iso osmotic colloid solution) till the hypovolaemia is corrected and thereafter the ongoing loss is made good of with 0.45% saline. Volume repletion reverses the pathophysiological factors leading to impaired water excretion.

Euvolumic children have high circulating ADH. They require reduction in ECF volume. Simple restriction of fluid may be sufficient in most cases. Seriously symptomatic cases with SIADH or water intoxication may need intravenous fursemide and hypertonic saline. Children with chronic SIADH may respond to lithium or demeclocycline.

For hypervolumic hyponatraemia the appropriate therapy is salt and water restriction. Dietary sodium restriction with diuretics will help to lower total body sodium effectively. In presence of renal failure dialysis stands as the most effective therapy.

The recovery in acute hyponatraemia with judicious therapy is not as harassing as quoted for adults (around 50%). Neurological sequelae is not also very significant in the survivors. In chronic hyponatraemia with
enthusiastic correction osmotic demyelination syndrome occurs at times. But very few cases have been reported in children.

A variant of SIADH occurs in malnourished children, the condition is referred as 'reset osmostat' where the relation of plasma osmolality and ADH release is pulled down. Other than the treatment for malnutrition no other specific therapy is available for hyponatraemia in this condition.

CME : 05 INTEGRATED ASSESSMENT : CAN STUDENTS AFFORD TO NEGLECT SOME DISCIPLINES?

R.L. BIJILANI, S.KOIRALA & M.P. UPADHYAY
B.P. KOIRALA INSTITUTE OF HEALTH SCIENCES DHARAN, NEPAL.

B.P. Koirala Institute of Health Sciences (BPKIHS) has an integrated organ system based curriculum. Accordingly, the examinations are also integrated on the same basis. The pass level is a minimum score of 50% in each theory paper, each of which generally covers one organ system, and a minimum score of 60% in all the practicals put together. There is no minimum pass level for individual disciplines. It is therefore possible for a student to do poorly in one discipline and still pass by making up the deficit in other disciplines. To avoid this, the weightage of individual disciplines, while being based on their teaching time, is moderated to ensure a minimum weightage of 12% and maximum weightage of 20% for any discipline in an examination covering six disciplines, viz. anatomy, physiology, biochemistry, pathology, microbiology and pharmacology. This measure can reduce but still cannot eliminate the possibility of neglect of disciplines with relatively low weightage. In order to examine whether this actually happens, part of the results of the 1st year annual examinations held in 1995 and 1996, and the 2nd year annual examination held in 1996 were analysed. In theory, only the short answer question papers, which have a weightage of 62.5%, were analysed because discipline-wise disaggregation is more difficult in case of multiple choice questions. In practicals only the results of the objective structured practical examination, which has a weightage of 87.5-91.7%, were analysed because disaggregation of the score in the objective structured clinical examination and integrated oral examination is impossible. A total of 87 candidates took the examinations. Out of these, in theory, the students below pass level were anatomy, 2; physiology, 3; biochemistry, 4; pathology, 0; microbiology, 19; pharmacology, 2. The corresponding figures for practicals were anatomy, 5; physiology, 16; biochemistry, 15; pathology, 10; microbiology 4; pharmacology, 7. The failures in all the disciplines put together come to 30(5.7%) in theory and 57 (10.9%) in practical. Out of these, 60% students in case of theory and 52.6% in case of practicals have a score which is within 5% of the pass level. The frequency of failing is unrelated to the weightage of the discipline. Further, the disciplines in which the frequency of failures is the highest are different in case of theory and practicals. Thus the students do not indulge in serious or calculated neglect of any discipline in integrated assessment as practiced in phase one of the MBBS program of BPKIHS.

CME : 06 THYROID GLAND HORMONAL STATUS IN AN IODINE DEFICIENT ENVIRONMENT IN NORTH EAST INDIA.

(Project was supported by the Board of Research in Nuclear science, DAE, Govt. of India at the Assam Medical College, Dibrugarh).

T.C. SAIKIA
PROF. PHYSIOLOGY (PRESENT) AL-AMEEN MEDICAL COLLEGE, BIJAPUR.

Sub Himalayan region of North East India is a chronic iodine deficient environment, endemic goitre, cretinism, and deafmutism are common (Raman et. al 1958 : ICMR 1989). Recent investigations have revealed that chronic insufficient iodine content in diet may cause in infants many physical deformities, neuromotor disturbances or low I.Q. among the inhabitants without any definite sings of Hypothyroidism. The present investigations had been designed to investigate the thyroid hormonal status in such an environment among three likely vulnerable groups. (i) School going children, (ii) Pregnant women and (iii) Neonates from 4 districts of Assam : Tinsukia, Dibrugarh, Sibsagar, and Jorhat.
The total number of subjects: 2,576 nos.

(i) Control group (Medical students): 209 nos.
(ii) School children (8-17 years): 832 nos.
(iii) Pregnant women (all stages of pregnancy): 1,440 nos.
(iv) Neonates: 95 nos.

The serum levels of T₃, T₄ were estimated by Radioimmunoassay (RIA) and TSH by Radioimmunometric assay (IRMA) technique. Kits were supplied by Radiopharmaceutical division, BARC Bombay. The T₃ and T₄ levels were expressed ng/ml and TSH uIU/ml.

For neonates serum was taken from chord blood.

Mean serum levels of T₃, T₄ and TSH were found in:

<table>
<thead>
<tr>
<th>Group</th>
<th>T₃ (ng/ml)</th>
<th>T₄ (ng/ml)</th>
<th>TSH (uIU/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>1.69</td>
<td>105.5</td>
<td>1.52</td>
</tr>
<tr>
<td>School going children</td>
<td>1.52</td>
<td>83.0</td>
<td>1.91</td>
</tr>
<tr>
<td>Pregnant women During Labour</td>
<td>2.15</td>
<td>121.2</td>
<td>1.24</td>
</tr>
<tr>
<td>Neonates</td>
<td>1.33</td>
<td>87.8</td>
<td>7.68</td>
</tr>
</tbody>
</table>

1. The total serum levels of T₃, T₄ were found lower and TSH higher in school going children than control.
2. During pregnancy T₃, T₄ were found higher but TSH seemed to be slightly lower than control.
3. During delivery, T₃ and T₄ were found lower and TSH higher than during pregnancy.
4. In neonates, TSH was very high but T₃ and T₄ were observed lower than the mothers.
   In six neonates, out of 95 (6.4%) showed very low T₃ and T₄ and high TSH. T₃, T₄ and TSH mean values in them were 0.27 ng/ml, 62.1 ng/ml, and 12.8 uIU/ml respectively.
5. In the euthyroid control group in males T₃, T₄ and TSH values were observed higher than the females.
6. Among the 4 districts Sibsagar showed lowest T₃ and T₄ and highest TSH levels.
   Normal higher values for T₃, T₄ and TSH in euthyroid male than female is perhaps suggestive of higher metabolic activities in male and can only be speculated for androgenic effect.

Lower T₃ and T₄ and higher TSH among the school going children from the endemic iodine deficient areas than control and very low T₃ and T₄ and high TSH in 6 neonates out of 95 neonates are definitely indicative of hypothyroidism. Out of all the districts sibsagar seemed to have been affected most and Dibrugarh least.

Results will be discussed in view of the chronic environmental iodine deficiency in the region.

CME: 07  SENSORY AND COGNITIVE FUNCTIONS IN PRIMARY HYPERTENSION
O.P. TANDON,
DEPTT. OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICAL SCIENCES & GTB HOSPITAL, DELHI - 110095.

The exact mechanisms of human hypertension remains unclear. Many factors have been implicated in the etiology of hypertension. It was interesting to know how sensorium works under the hypertensive milieu and whether it affects higher cognitive functions of the brain.

Evoked response studies were done in hypertensive patients and data compared with the normotensive subjects. Nerve conduction, auditory brainstem and visual evoked responses were analysed in these subjects. There were significant changes in hypertensive cases, suggesting that nerve conductive processes of the periphery and in the brain stem auditory pathways were slowed down. In some cases latencies of these waves were abnormally high, beyond 99% tolerance limit of the normotensive controls.

The cognitive functions as adjudged by event related evoked potential (P₃₀₀) also showed significant changes, P₃₀₀ latency was significantly increased in essential hypertensive patients. These findings suggest that pathophysiological mechanisms underlying essential hypertension do affect sensory and cognitive functions of the brain.
ANALYSIS OF POLYAMINE METABOLISM FOR EARLY DETECTION OF CANCER

A. K. GANGULY
UNIVERSITY COLLEGE OF MEDICINE, CALCUTTA - 20

Existing literature shows that there are evidences for and against involvement of polyamines in growth process. In an attempt to find out whether there is really any correlation between polyamine metabolism and cancerous growths, a series of experiments were planned involving experimental animals and human beings.

It is well known that a cancer cell differs from its normal counterpart by its ability to grow, divide and invade neighbouring or distant organs. It is also known that surface proteins and endoskeleton of cancer cells are completely disorganised and as a result, the receptors over the cell membrane become defunct.

From the experiments that had been undertaken, it is clearly evident that not only the synthesis of different members of the polyamine family like putrescine, cadavarine, Spermine and Spermidine is increased to a large extent, the non-specific enzyme, Di-amine oxidase, concerned with hydrolysis of different polyamines, also increases enormously in cancerous growth, irrespective of their type and site. It might appear to be a paradox, because if Diamine oxidase activity increases in cancerous growth, why should there be a rise in polyamine fractions? In fact, it is so, because the turn over rate of synthesizing enzyme, Ornithine Decarboxylase for polyamines is many times higher than Di-amine oxidase. In brain tumour, GABA concentration has also been found to be increased in serum besides polyamines and DAO activity.

Conclusion is reached therefore that routine estimation of serum polyamines, Di-amine Oxidase activity and GABA concentration will be of immense help in earliest possible detection of cancer in the body and that will be a blessing beyond compare for so many. Early detection of cancer by this method would allow for more sound and holistic treatment before heroic and invasive method would become warranted.

CEREBRAL ISCHAEMIC - REPERFUSION INJURY

MANAS PANIGRAHI, K.V.R. SASTRY, V. RAVINDRANATH, B.S. DAS,
DEPARTMENT OF NEUROSURGERY, NIZAM'S INSTITUTE OF MEDICAL SCIENCES, HYDERABAD. NATIONAL INSTITUTE OF MENTAL HEALTH AND NEURO SCIENCES, BANGALORE.

Cerebral ischaemia - reperfusion can occur in a variety of clinical settings such as stroke, cardiac arrest, post-surgical brain swelling, subarachnoid haemorrhage and head trauma. Even though ischaemia is a recurring theme in each of these clinical settings, it is clear from laboratory work that the pathophysiology of brain injury varies. Experimental studies have demonstrated that oxygen free radicals may be important mediators of brain injury and brain oedema, and pharmacological antagonism of oxygen free radicals may show beneficial therapeutic results. The role of glutathione isopropyl ester and alpha lipoic acid in attenuating free radical induced damage in an experimental animal model shall be discussed. Though no concluding clinical data are available, but oxygen free radical scavengers may possibly become a critical therapeutic modality for brain injury and brain oedema.

CURRENT BOUNDARIES OF THE FIBROUS EMPIRE

R.L. BILJANI,
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110 029.

Dietary fibre (DF) is a heterogeneous group of loosely substances which are all plant constituents, most of them polysaccharides associated with the cell wall. The physiological feature common to all these substances is their resistance to the digestive action of endogenous enzymes of the human gut. The physiological effects of DF are observed primarily in the gastrointestinal tract (1) The water-holding properties of DF increase the volume and viscosity of gastric contents leading to slower transit of gastric and small intestinal contents. Nutrient absorption is, in general, marginally but consistently reduced by DF. The reduction is seen in vivo as well as in the everted intestinal sac preparation in vitro. Further, as a result of DF administration nutrient absorption occupies longer segments and shifts to distal regions of the small intestine. High fibre diets induce structural changes in the small intestine which are consistent with the observed changes in absorptive function. By binding minerals, DF may reduce their absorption as well. A recent study has shown that wheat bran...
abolishes the inverse relationship between calcium load and absorption fraction because it reduces the absorption fraction to a low level of 23% on a wide range of calcium intakes (2). It has further been shown that DF-induced increase in fecal nitrogen excretion is associated with a reduction in blood urea which may be exploited in patients having chronic renal failure (3). In contrast with the stomach and small intestine, transit through the large intestine is accelerated by DF. The factors which may contribute to this effect are the increased mass of large intestinal contents, stimulation of bacterial growth in the large intestine, and products of fermentation of DF.

The gastrointestinal effects of DF are at least partly responsible for its metabolic effects, notably on glucose metabolism and lipoprotein metabolism. The acute effect on glucose metabolism is reduction of postprandial glycaemia. The reduction is seen maximally with water-soluble viscous fibre (4). The effect has been considered to be primarily due to increased viscosity and consequent delay in gastric emptying but release of enteroglucagon (5) and formation of propionate by fermentation (6) may also contribute to it. The long-term effect of DF on glucose metabolism is to improve carbohydrate tolerance. The effect has been observed with several but not all coarse cereals (7). Slower gastric emptying, enhanced hepatic lipogenesis and upregulation of insulin receptors may contribute to the long-term effect. Viscous, water-soluble varieties of DF have also been reported to lower serum cholesterol and improve the lipoprotein profile (7,8). The effect seems to be primarily due to the increase in faecal bile acid excretion brought about by DF but physical properties such as viscosity (9) and chemical products such as propionate (6) may also contribute to it.

Recent studies on DF have provided a better understanding of its role in the pathophysiology of constipation, colorectal malignancy, obesity, diabetes and atherosclerosis. They have also established on a more scientific footing the modest but definite contribution which DF can make to the prevention and treatment of these disorders.

AP: 01 EFFECT OF SUPEROXIDE DISMUTASE AND ACIDIFIED SODIUM NITRITE ON INFARCT SIZE FOLLOWING ISCHEMIA AND REPERFUSION IN DOGS

YOGESH TRIPATHI, B.M. HEGDE & C.V. RAGHUBEER,
DEPARTMENT OF PHYSIOLOGY, MEDICINE AND PATHOLOGY, K. M. COLLEGE, MANGALORE - 1

The effects of superoxide dismutase (SOD) alone or in combination with acidified sodium nitrite (NaNO2), a liberator of nitric oxide were examined in dogs after ischemia and reperfusion. Animals were divided into five groups. Left anterior descending coronary artery was occluded for 90 minutes followed by 4 hours of reperfusion with or without therapeutic interventions given preceding reperfusion. Left ventricular end diastolic pressure (LVEDP), left ventricular systolic pressure (LVSP) and ECG changes were monitored throughout the study. Area at risk was defined by Evans blue and area of infarction by incubation in triphenyltetrazolium. Myocardial tissue lipid peroxidation was measured in ischemic and non-ischemic zones. There was no evidence of infarction until ninety minutes of ischemia. Percentage area of necrosis vis-a-vis area at risk and percentage necrosis in left ventricular mass was significantly low in animals treated with combination of SOD and NaNO2 in comparison with isolated treatment with saline, SOD or NaNO2. LVEDP increased significantly following ischemia and remained unchanged during saline reperfusion. Treatment with SOD, NaNO2 in isolation or its combination significantly lowered LVEDP. Maximum increase in tissue lipid peroxidation was observed in saline and NaNO2 treated animals. SOD alone or in combination with NaNO2 significantly lowered the lipid peroxidation. The results clearly demonstrate that reperfusion can cause necrosis in ischemic myocardium. Combined treatment with SOD and NaNO2 offers significant cardioprotection against oxidative stress.

Key words: Superoxide dismutase, acidified sodium nitrite, ischemia, reperfusion, infarct size, cardioprotection

AP: 02 MILD ELECTRICAL STIMULATION OF PONTINE TEGMENTUM AROUND LOCUS COERULEUS REDUCES RAPID EYE MOVEMENT SLEEP IN RATS.

SANGEETA SINGH, BIRENDRA NATH MALLICK,
SCHOOL OF LIFE SCIENCES, JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI-110067, INDIA

The norepinephrinergic neurons in the locus coeruleus (LC) cease firing during REM sleep (REMS) and increase firing during REMS deprivation. Most of the earlier studies used lesion and transection techniques
which could not confirm the role of LC in REMS generation and/or its maintenance, if at all. Hence, in this study it was hypothesized that if the LC REM-off neurons must cease firing before the onset of REMS, its continuous activation should eliminate or at least reduce REMS. Electrophysiological parameters characterizing sleep-wakefulness-REMS were recorded in freely moving male albino rats. In an attempt not to allow the REM-off LC neurons to cease firing, low intensity (200 J1.A), low frequency (2 Hz) rectangular (300 μs) pulses were continuously delivered to the LC bilaterally through chronically implanted electrodes, and the effects on sleep-wakefulness-REMS were investigated. Although the stimulation did not affect sleep state of the animals, it reduced REMS significantly. The effect on REMS was similar to that of REMS deprivation. Total duration of REMS was significantly reduced during stimulation and showed a rebound increase during the post stimulation period. This reduction in REMS duration was primarily due to a significant reduction in the REMS frequency/h while the mean REMS duration/episode was not affected. Thus, the results of this study suggest that the stimulated area (LC) affects REMS, most likely by suppression of REMS generation process.

Keywords: Locus coeruleus; Norepinephrine; REM sleep; REM sleep frequency; REM sleep duration; Stimulation
Adenosine 1000 mg kg⁻¹, i.p., 5 min pretreatment and CPA 10 mg kg⁻¹ i.p., 60 min pretreatment, showed significant protection against acute PTZ-induced seizures while, CPA up to 10 mg kg⁻¹ was ineffective. The adenosine analog 2-CADO in a dose of 5 mg kg⁻¹ was only partially protective and on increasing the dose to 10 mg kg⁻¹, this protection was lost.

Theophylline, a non specific adenosine receptor antagonist in doses of 50 mg kg⁻¹ and specific adenosine A₁ receptor antagonist, 8-cyclopentyl-1,3-dipropylxanthine (DPCPX), in doses of 1 mg kg⁻¹, before the maximally protective doses of adenosine and CPA, completely reversed the protection afforded by them against PTZ seizures. While, the adenosine A₂ receptor antagonist, 3,7-dimethyl-1-propargylxanthine (DMPX) pretreatment failed to reverse the protection.

Adenosine and adenosine A₁ receptor agonist in doses that protected against seizures after acute PTZ administration, offered only incomplete protection when tested against PTZ kindled seizures.

The effects of adenosine and adenosine receptor agonists on mean arterial pressure, heart rate and rectal temperature were studied, to rule out the possibility of the systemic effects mediating the protection of PTZ seizures. All these agents produced a fall in mean arterial pressure, heart rate and hypothermia in the doses exhibiting anticonvulsant response. While the effect on blood pressure and heart rate was immediate i.e. seen within 5 min and, maintained throughout the observation period, the development of hypothermia lagged behind the onset of hypotension and bradycardia. There was however no correlation between hemodynamic and hypothermic response and the anticonvulsant effect.

The results indicate that adenosine mediated anticonvulsant effect is via stimulation of A₁ receptor. Hypotension and hypothermia do not contribute to the protection observed with adenosine and adenosine A₁ receptor agonists.

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NIHAR RANJAN NAYAK, DEBABRATA GHOSH, BILL L. LASLEY AND JAYASREE SENGUPTA
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES. NEW DELHI - 110 029, INDIA

The use of mifepristone as an anti-implantation agent in the primate has been explored in the rhesus monkey with two specific aims: (i) to determine the contraceptive efficacy of very low dose mifepristone administered on mated, Cycle days 16, 17 and 18; and (ii) to test the hypothesis that alteration in endometrial prostaglandin milieu by using either prostaglandin analogue or prostaglandin synthesis inhibitor can intervene the antifertility effect induced by mifepristone. Thirty female monkeys were randomly assigned to one of the six treatment groups. Five monkeys in the control group (Group 1) were subjected to mating during cycle days 8-22. Four out of five monkeys became pregnant in the first mated cycle (80%) with detection of serum mCG by 12.7 ± 1.5 day after ovulation. In group 2, 12 mated cycles were studied in five monkeys, mifepristone [RU486, 2 mg/day/animal, s.c. in 1 ml vehicle (1:4, benzyl benzoate ; olive oil, v/v)] was given on cycle days 16, 17 and 18. In this group no pregnancy was observed, thus providing complete pregnancy protection. Although there was an apparent extension of treatment cycle lengths in 5 cases with no incidence of intermenstrual bleeding or spotting, there was no significant changes in serum estradiol (E) and progesterone (P).

In group 3, four monkeys received prostaglandin (PG) synthesis inhibitor, diclofenac sodium (D, 25mg/day/animal, i.m.) on cycle days 16, 17 and 18 in seven ovulatory menstrual cycles. Four of these cycles (57%) resulted in normal pregnancies; however, mCG detection (on 16.8 ± 1.2 day after ovulation) was significantly (p < 0.05) delayed as compared to group 1. In group 4, four monkeys received 100 ug misoprostol (M), a PGE1 analogue, by gavage on mated cycle days 16, 17 and 18. Four pregnancies occurred in five treatment cycles (80%) with normal profiles of serum E and P; mCG was first detected on 13.2 ± 1.7 day after ovulation. In group 5, seven monkeys received same dosages of RU486 and D on mated cycle days 16, 17 and 18. One hundred per cent pregnancy protection was observed with luteal phase lengthening in 8 treatment cycles but with unaltered E and P profiles. In group 6, five monkeys in 9 treatment cycles received same dosages of RU
486 and M on mated cycle days 16, 17 and 18. One pregnancy occurred; evaluation of E and P levels showed that the drug was given in the preovulatory period, which delayed ovulation and implantation, as mCG was detected 19 days post-ovulation. A delay in vaginal bleeding was observed in 4 treatment cycles with unaltered E and P profiles. Low dose mifepristone appears to be a potential candidate for luteal phase and post-coital emergency contraception. However, the hypothesis that altered endometrial prostaglandin milieu may be responsible for mediating the anti-implantation effect of RU486 does not appear to be tenable based on our results in the rhesus monkey.

**AP : 06 EFFECT OF SAHAJA YOGA PRACTICE ON SEIZURE CONTROL AND EEG CHANGES IN PATIENTS OF EPILEPSY**

**USHA PANJWANI, W. SELVAMURTHY, S.H. SINGH, H.L. GUPTA, L. THAKUR & U.C. RAI,**

DEFENCE INSTITUTE OF PHYSIOLOGY AND ALLIED SCIENCES AND DEPARTMENTS OF PHYSIOLOGY AND MEDICINE, LADY HARDINGE MEDICAL COLLEGE AND SMT. S.K. HOSPITAL, NEW DELHI.

The effect of Sahaja yoga meditation on seizure control and electroencephalographic alterations was assessed in 32 patients of idiopathic epilepsy. The subjects were randomly divided into 3 groups. Group I (n=10) practised Sahaja yoga for 6 months, Group II (n=10) practised exercises mimicking Sahaja yoga for 6 months and Group III (n=12) served as the epileptic control group. Group I subjects reported a 62 per cent decrease in seizure frequency at 3 months and a further decrease of 86 per cent at 6 months of intervention. Power spectral analysis of EEG showed a shift in frequency from 0-8 Hz towards 8-20 Hz. The ratios of EEG powers in delta (D), theta (T), alpha (A) and beta (B) bands i.e., A/D, A/D+T, A/T and A+B/D+T were increased. Per cent D power decreased and per cent A increased. No significant changes in any of the parameters were found in Groups II & III, indicating that Sahaja yoga practice brings about seizure reduction and EEG changes. Sahaja yoga could prove to be beneficial in the management of patients of epilepsy.

Key Words EEG-epilepsy-seizure frequency-yoga

**AP : 07 SELECTIVE USE OF CALCIUM CHELATORS ENHANCES THE YIELD OF CALCIUM-TOLERANT MYOCYTES FROM ADULT HEART**

**PREETHA NAIR & R. RENUKA NAIR**

DIVISION OF CELLULAR & MOLECULAR CARDIOLOGY, SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCE & TECHNOLOGY, TRIVANDRUM - 695 011, INDIA.

Isolation of viable and functional cells from the adult heart remains an intriguing problem for investigators who choose to use the cardiomyocyte model for experimental studies. With a few modifications of the existing procedures we have been able to improve the yield of ventricular myocardial cells from the adult rat heart. Sarcolemmal damage leading to hypercontracture due to Ca loading appears to be the major hindrance to the successful isolation of sufficient number of viable cells. The two crucial steps are found to be the preenzymatic perfusion for Ca depletion and the final step of Ca-repletion in extracellular medium for the isolation of Ca-tolerant myocytes. Inclusion of EGTA and taurine during the initial perfusion of Ca-free medium and of trypsin during reintroduction of calcium led to a considerable increase in the yield of calcium-tolerant myocytes. The contraction amplitude and speed of shortening and relaxation of isolated cells were measured using an edge detection device.

Selective use of calcium ion chelators appears to have a beneficial effect on the isolation of Ca tolerant myocytes. The method standardised in this laboratory finds application in the field of experimental medicine and the pharmacologic evaluation of positive and negative inotropic effects of drugs and testing for cardiotoxicity. For the study of molecular mechanisms of myocardial contraction, the isolated cell systems are better suited than invivo experimental models.
The Health status of an individual, a community or a nation is determined by the environmental factors which surrounds man. The World Health Organisation (W.H.O.) defines Environmental Health as "The control of all those factors in man's physical environment which exercise or may exercise deleterious effect on his physical development, health and survival". It is due to these measures that there has been spectacular reduction in water and flea borne diseases in USA and other Western countries. India is still lagging behind in the field of Environmental Health. The basic problems of safe water supply and sanitary disposal of human excreta are yet to be solved. Much of ill-health of our country is due to defective Environment. As old problems are being solved, new problems are arising. Air pollution is of growing concern in many Urban Centres. Industrial growth has given rise to the problem of Environmental pollution by Industrial wastes. Advances in nuclear technology have produced the problem of Radio-active pollution of the Environment. The demographic growth and fast Urbanization all over the World are bringing social and Environmental changes. Therefore, the attainment of a healthy Environment is becoming more and more complex. In developing countries like India, when basic sanitary measures are lacking, water, food and vector borne diseases, such as Malaria, Cholera, Typhoid etc. are responsible for significant morbidity and mortality. Hence W.H.O. stresses the need to improve health by improving Environmental Health and it is possible by elimination or control of these factors which are harmful to man.

Antarctica the white continent has no "at home" population instead it hosts 1000 people in 44 base camps in winter and 5000 people in summer. Recently Antarctica is beginning to command more attention as the number of visitors are increasing thus resulting in signs of environmental destruction and pollution by man. Therefore, either the support of "Greenpeace" there is attempt to preserve the fragile ecological balance of Antarctic. Till very recently this was the land of "No Pollution" and it was ideal model land for environmentalist for study of natural global environment. The presence of Ozone hole in Antarctica is the index of global pollution, thus it is essential to protect the Antarctic environment and dependent ecosystem. The main sources of pollution in Antarctica are by domestic wastes as synthetic materials, glass, metal, food, medical and laboratory solvents, petroleum, lubricant oils, etc. The non-domestic wastes are rubbers, heavy metals, photochemicals, used batteries, radio active materials etc. The effect of the pollution is hereby being reported as increase in number of microbial growth in lakes, increase in incidence of infections in members of expedition and alteration in the population of krills and whales in cold water. Therefore, it is somewhat ironic that scientific research in Antarctica has direct benefit for study of planetary ecosystem but the effect of this research is deleterious to global environment.

Electromagnetic fields produced by high voltage power lines, power stations and domestic appliances have been considered as environmental pollutants. Besides the potential health hazard, it is suggested to be a chronic stressor. It damages the male and female gametes, increases foetal mortality rate, suppresses ovarian functions, retards physical growth, alters food and water intake and cardiac activity. Further, it affects the social behaviour and increases the risk to mental depression. Cholinergic and opioidergic neurotransmitter systems are affected too. The involvement of opioidergic system is reflected in the nociceptive responses of the animal. They are reported to cause chromosomal abberations by transmitting the signals from cell membrane.
to nucleus. Poly ADP-ribosylation is involved in several aspects of chromatin structure and functions. We have shown the involvement of poly ADP Ribosylation in EMF mediated effects. The cytotoxic effects are mediated by apoptosis in the responsive cells. There are many epidemiological studies suggesting a risk ratio of 2 to 10 for carcinoma of breast, brain and leukemia in the population exposed to chronic EMF. It is therefore believed that injudicious exposure to EMF poses a health hazard.

SYM : 04 ALLEGED ROLE OF LIVESTOCK IN ENVIRONMENTAL POLLUTION

J.P. MITTAL
HEAD DIVISION OF ANIMAL PHYSIOLOGY, CENTRAL SHEEP & WOOL RESEARCH INSTITUTE, AVIKANAGAR, VIA : JAIPUR - 304 501, RAJASTHAN

Industrialization, agriculture farming and livestock farming are categorised as environmental pollutants in order of descending merit. The contribution of livestock to Methane production is less than 2 percent and to the greenhouse effect is only 0.3 percent, which can also be minimised by proper animal management. The livestock fed on low quality roughages produce more Methane than fed on high quality feeds and fodders. Disproportionate increase in livestock population may cause discrepancy between manure production and area of land available for manure disposal. The growth promoters used in livestock industry it used illegally with totally uncontrolled formulations, dosages and treatment intervals without any regard to withdrawal periods, may prove to be hazardous. Enhanced use of certain trace minerals as feed additives my some time result in increased levels of these minerals in slurry of livestock rearing units. Studies on acute and chronic toxicity of antibiotics as feed additive revealed that their quantities in residues do not offer any health hazard to the consumers. The use of various chemotherapeutics in livestock production are safe as they are not found in toxic levels in tissues and muscle of livestock. Water contamination by livestock is of no significance as their tolerance to various salts, including Nitrate and Fluoride is reasonably high. Indeed livestock species are protecting environmental pollution and are eco-friendly to the environment. Thys are not only utilizing agricultural byproducts and low quality forages for production of food and energy but are protecting pollution of environment by preventing Methane formation from their burning and rotting.

UG : 01 STUDY OF PULMONARY FUNCTIONS IN INDIVIDUALS PLAYING DIFFERENT SPORTS

P. K. MEHROTRA, N.S. VERMA, R.K. YADAV, S. TEWARI, N. SHUKLA
G.S.V.M. MEDICAL COLLEGE, KANPUR, DEPARTMENT OF PHYSIOLOGY, K.G'S MEDICAL COLLEGE, LUCKNOW

Regular exercise has proved to be beneficial for the human body and lungs are no exception. The present study was undertaken to assess the relation between the quality of the exercise and the quantitative effect on the lung functions by comparing pulmonary function values of players engaged in different sports. Players playing different sports like football (n=18), hockey (n=19), volleyball (n=20), swimming (n=20) and basketball (n=18) were chosen for this study. The subjects were taken from K.D. Sigh Babu Stadium and Sports College, Lucknow. Twenty students, who were not directly involved in any active sports were taken as controls. The parameters included in this study were FVC, FEV-1 & PEFR.

The results indicate that all the sports persons showed a higher value of pulmonary functions in comparison to the controls and the difference is statistically significant (p<0.05). Comparing the values amongst sportspersons it was seen that swimmers showed the maximum increase in their lung functions. This shows that even though all sports have a positive effect on the lung functions, swimming has the best effect quantitatively, enhancing lung functions to a higher extent.

UG : 02 BONE DERIVED IMMUNOMODULATOR — AN INVITRO STUDY

R.M. ANAND SIVAPRAKASH
STANLEY MEDICAL COLLEGE, MADRAS

Migration of lymphoid cells, their recirculation and interaction are essential for immune suppression or enhancement. These factors are known to be affected by local mediators, cytokines and other humoral factors. Bone marrow derived immunomodulator (BIM) are known to increase functional T cell numbers in spleen and
thymus by acting mainly on spleen. The present study was designed to explore the role of BIM on the invitro migration of splenocytes. Leucocyte migration inhibition test was carried out using different fractions of splenic cells viz Whole splenic cells, Splenic cells after removal of macrophages and splenic cells after removing nylon wool adherent "B" cell population from unsensitized and sensitized animals in the presence as well as absence of the antigen.

Our results indicate that in the normal unsensitized splenic cell population the BIM acts on macrophages to enhance their migration. In presence of antigen and BIM, after removal of macrophages the migration index was enhanced compared to its control fraction indicating that in the presence of BIM and antigen, the macrophages behave in a different manner.

In presence of BIM< the total splenocyte migration index showed enhanced migration, compared to other populations as well as from the fractions isolated from immunized control animals.

UG : 03 INNATE IMMUNITY AFTER 48 HOUR REM SLEEP DEPRIVATION

P. MANNAM,
STANLEY MEDICAL COLLEGE, MADRAS

REM sleep deprivation is known to affect many of the putative humoral sleep factors which are immunomodulators. However the effect of REM sleep deprivation on innate immune parameters is not well documented. Hence, this study was undertaken. Male Wistar strain albino rats (180-200g) were deprived of REM sleep by inverted pot technique for 48 hours and sacrificed immediately (9-10 am) along with controls.

The REM deprived animals showed a decrease in their total WBC count (p<0.001), lymphocyte percentage (p<0.001) and eosinophils percentage (p<0.02), in the peripheral blood. The neutrophil killing power was markedly reduced (p<0.001), along with a reduction in the spleen weight/body weight ratio. The peripheral blood neutrophil count in these animals showed an increase (p<0.001) along with an increase in their phagocytic index (p<0.001) and avidity index (p<0.05). There was a marked increase in the lymphnode/body weight ratio (p<0.001). The plasma corticosteroid level was elevated in these animals (p<0.001).

UG : 04 EEG VARIATIONS WITH HANDEDNESS


A research work was undertaken to evaluate the variations in the EEGs of left handed and right handed individuals. Earlier work stated that Alpha wave is of slightly augmented amplitude on the right side in right handed subjects. 21 channel awake EEGs (under 10-20 systems of electrode placement) of normal healthy right handed and left handed individuals between the age group of 18-28 years were taken. The Montages used were AP, RL and Monopolar. The difference between the corresponding areas on the right and left hemisphere was evaluated in terms of changes in frequencies of the waves and in particular the voltage change (amplitude) of the alpha waves. Handedness of the individuals was determined by questioning the history of the individuals (so as to start of scribbling, grip, reflex movements, eating etc by which hand). No chemical test was performed. It was found that the non-dominant hemisphere showed alpha waves of higher amplitude (as was found earlier works) but there were some subjects in which alpha waves had a lower amplitude (voltage change) on the non-dominant hemisphere. The change in the frequency and amplitude of the waves were tabulated and statistically analysed.

UG : 05 INCIDENCE OF ISCHAEMIC HEART DISEASE AMONG SMOKER DIABETICS

S. VERMA, V. K. SRIVASTAVA, R. R. AGRAWAL, R. C. DWIVEDI

Diabetes in adults is now a global health problem and ranks 6th as underlying cause of death, Diabetes
and smoking are major risk factors for Ischaemic Heart Disease (IHD). During our work we studied case histories of subjects who attended Diabetes Clinic, OPD, Department of Medicine, King George's Medical College, Lucknow, during the period from 2/84 to 7/86. We followed the subjects for further 3½ years. We matched the normotensive subjects for age and sex. The subjects taken for study were within normal blood cholesterol level. Age and sex matched incidences of IHD among smoker and non-smoker diabetics were analysed and were compared with controls. We found that incidence of IHD is higher among smoker diabetics as compared to smoker non-diabetics. The results were also found statistically significant.

**KEY WORDS :** Incidence, IHD, Diabetes, Smokers.

**UG-06 : INCIDENCE OF ISCHAEMIC HEART DISEASE IN DIABETICS OF DIFFERENT AGE GROUPS**


DEPARTMENT OF PHYSIOLOGY & MEDICINE K.G'S MEDICAL COLLEGE, LUCKNOW

Diabetes in adults is now a global health problem and ranks 6th as underlying cause of death. Diabetes is a major risk factor for Ischaemic Heart Disease (IHD). Complications arise with increasing age of subject as with age metabolism of body changes, diabetes adds to the complications. During our work we studied case histories of subjects who attended Diabetes Clinic, OPD, Department of Medicine, K.G's Medical College, Lucknow, during a period from 2/84 to 7/86. We followed the subjects for further 3½ years. We divided the subjects into 4 age groups - 36-45 years, 46-55 years, 56-65 years and 66 years and above. Non-smoker, normotensive subjects were taken and were matched for sex. Subjects taken for study were within normal blood cholesterol levels. Sex matched incidence among the subjects of different age groups were analysed and were compared with controls. We found that age matched incidence of IHD among diabetics is higher than non-diabetics and that incidence increases with age of subject. The results were also found statistically significant.

**KEY WORDS :** Incidence, IHD, Diabetes, Age.

**UG : 07 EEG VARIATIONS WITH MENSTRUAL CYCLE**


DEPARTMENT OF PHYSIOLOGY AND DEPARTMENT OF NEUROLOGY, K.G'S MEDICAL COLLEGE, LUCKNOW.

A research work was undertaken to evaluate the variations in the EEGs of normal females during the bleeding phase and non-bleeding phase of the menstrual cycle. Earlier work stated that alpha amount and frequency changes when the intermenstrual and premenstrual phases are compared. 21 channel awake EEGs (under 10-20 system of electrode placement) of normal healthy females between the age group to 18-28 years were taken. Two readings were taken. First one during the bleeding phase of menstrual cycle and the second reading at least 1 week after the first reading. The Montages used were AP, RL & Monopolar. The difference between the EEGs of bleeding phase and non bleeding phase of the menstrual cycle were taken into account in terms of changes in the frequency of the waves and the changes in the amplitude (voltage change) of the alpha waves. The results i.e. changes in the frequency and amplitude of the waves were tabulated and statistically analysed. It was found that the frequency of occurance of alpha waves decreaded during bleeding phase of menstrual cycle. Also there was a generalised decrease in the amplitude (voltage change) of the alpha waves during the bleeding phase of the menstrual cycle.
AGE RELATED VARIATION IN THE SENSITIVITY OF CARDIOMYOCYTES TO SUB OPTIMAL CONCENTRATIONS OF EXTRACELLULAR MAGNESIUM

PREETHA NAIR & R. RENUKA NAIR
DIVISION OF CELLULAR & MOLECULAR CARDIOLOGY, SREE CHITRA TIRUNAL INSTITUTE FOR MEDICAL SCIENCES & TECHNOLOGY, TRIVANDRUM, KERALA,

Magnesium has recently emerged as an extracellular ion with significant implication in cardiovascular pathology, and its regulatory role in cardiac contraction is intriguing. Variations in the level of extracellular Mg has been observed both under natural conditions and in pathological states. The beneficial effects of Mg-therapy has been realised but the effect of suboptimal levels of Mg in myocardial mechanics has received very little attention. We therefore decided to study the effect of Mg-deficiency on myocardial contractility and hypothesized that "the sensitivity to extracellular changes may be dependant on age" based on the assumption that, as the heart matures from young to the adult, changes in receptor/channel number and localisation accompanied by modifications in the excitation-contraction coupling can influence the sensitivity of myocardial contractile response to extracellular Mg.

We have studied the effect of different concentrations of extracellular Mg using cardiomyocytes isolated from Sprague-Dawley rats of three different age groups: (a) 4-5 weeks (Juvenile) (b) 22-25 weeks (young-adult) (c) 1 year old. The inotropic response to treatment has been measured using a video based edge detection device, the change in cell length being a measure of the amplitude of contraction.

Using serially lower dilutions of the physiological level of Mg (1.2mM), a positive inotropic response eas observed at 0.72mM, followed by a decrease in contraction at lower concentrations of Mg. This observation was consistent for all the age groups studied. Considering the contractile response at 1.2mM as 100%, the increase in amplitude of contraction at 0.72mM was found to be 55.1%, 55.5% and 32.8% respectively for the juvenile, young adult and one year old rats and the decrease in contraction amplitude with total Mg-depletion was 16%, 3.6% and 13.1% respectively. The increase in contractility may be associated with an increase in available calcium due to increased membrane permeability in Mg-deficiency. Alterations in Ca-transients beyond a threshold can lead to cellular damage due to Ca-overload as observed in the cells treated with Mg-depleted medium. Mg is known to be a weak Ca-channel blocker and assuming L-type Ca-channel as the point of Ca-influx, the use of Ca-channel blocker CdCl2, showed that the contractile force was reduced irrespective of Mg2+-concentration or age, but the extent of reduction was greater in Mg-deficient medium and was of the order: 1 year old > juvenile > young adult. Both these experiments point out to a greater resistance of the young-adult to extracellular changes.

The variation in myocardial response in relation to age underscores the importance of a deeper understanding of the structural and functional changes associated with age, both for delineation of pathogenic mechanisms and in the design of therapeutic strategies.

ATTENUATION OF EXCITOTOXICITY BY L-DEPRENYL AND MgSO4 IN SPINAL CORD ISCHEMIA.

B. KIRAN, B.S. SHANKARANARAYANA RAO, T.R. RAJU AND P.N. BINDU
DEPARTMENT OF NEUROPHYSIOLOGY, NATIONAL INSTITUTE OF MENTAL HEALTH & NEUROSCIENCES, BANGALORE

Spinal cord ischemia was developed in freely moving, conscious rats to study the neuroprotective properties of l-depenryl and MgSO4 on degenerating motor neurons as assessed by biochemical and morphological parameters. Ischemia was induced by modified snare ligature technique. The ischaemised subjects were treated with drugs (i.p) for a period of 14 days to assess the neuroprotection. The glutamate levels were estimated in ischaemised, drug treated as well as in the control groups. It was observed that, the glutamate levels were significantly high (ANOVA, LSD p<0.001) in ischaemised groups when compared to the drug treated and control groups. The Cresyl violet stained sections of lumber spinal cord showed more healthy motor neurons in drug treated groups, which were comparable to that of control groups. Where as in ischaemised groups, the motor neurons at different phases of degeneration were observed. In conclusion, the results suggests that the neuroprotective action of the drugs could be through the regulation of glutamate induced excitotoxicity.
BENEFICIAL EFFECTS OF DRUGS ON RENAL ISCHAEMIA; A MORPHOLOGICAL STUDY

U. K. SATAPATHY, ANUPAMA PANDA, S. N. PANDA
DEPARTMENT OF PHYSIOLOGY AND UROLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK

Ischaemia is a potent source of renal damage. Yet it is sometimes employed in conservative renal surgery. The present study therefore aims at evaluating the protective effects of different drugs like MANNITOL, PROPRANOLOL and CORTICOSTEROIDS used alone or in combination.

Eighteen dogs were studied. The kidneys were exposed by transperitoneal route, under intraperitoneal pentothal sodium anaesthesia. The ischaemic renal model was produced by clamping renal pedicle for 30 minutes. Five categories of study was done.

i) Normal renal Biopsy.

ii) Post ischaemia renal Biopsy.

iii) Post ischaemia drug and Biopsy.

iv) Pre ischaemia drug and Biopsy.

v) Pre and post ischaemia drug and Biopsy.

It was seen that there is a beneficial effect of both propranolol and mannitol given alone before ischaemia. The combinations of different drugs did not improve upon the beneficial effects of individual drugs.

EFFECT OF SELF-STIMULATION REWARDING EXPERIENCE ON THE ACQUISITION AND PERFORMANCE OF OPERANT AND SPATIAL LEARNING IN RATS.

D. YOGANARASIMHA, B.S. SHANKARANARYANA RAO, T.R. RAJU & B.L. METI
DEPARTMENT OF NEUROPHYSIOLOGY, NATIONAL INSTITUTE OF MENTAL HEALTH & NEUROSCIENCES, BANGALORE

Self-stimulation (SS) rewarding experience results in the increased dendritic arborization and synapses in pyramidal neurons of the hippocampus. In the present study the effect of such structural changes on subsequent cognitive functions after SS experience in rats was evaluated. Adult male Wistar rats were stereotaxically implanted with bipolar nichrome electrodes in substantia nigra-ventral tegmental area (n=6) and subjected to receive SS reward experience daily for 15 min over a period of 10 days. After the completion of 10 days of SS experience, the rats were tested for acquisition and performance of operant and spatial learning tasks for food reward using Skinner's operant chamber and T-maze respectively. SS group of rats showed rapid acquisition of both the tasks. The pedal press responses in operant learning task were found to be significantly higher (P<0.001) in SS group compared to normal (n=6) and sham (n=6) control rats. In T-maze spontaneous alternation test, the SS rats showed significantly higher (P<0.001) number of alternations with less percent errors compared to controls. The results revealed that prior SS experience facilitates the operant and spatial learning tasks as indicated by rapid acquisition and better performance. Such facilitatory effects may be due to the long-lasting structural changes in the hippocampal pyramidal neurons, which accelerate the learning process.

DEPRENYL INDUCED NEURONAL PLASTICITY IN CA3 HIPPOCAMPAL AND LAYER II-III MEDIAL FRONTAL CORtical PYRAMIDAL NEURONS IN PRIMATE BRAIN - A QUANTITATIVE GOLGI STUDY.

B.S.SHANKARANARYANA RAO, M.K. LAKSHMANA, B.L. METI & T.R. RAJU
DEPARTMENT OF NEUROPHYSIOLOGY, NATIONAL INSTITUTE OF MENTAL HEALTH & NEUROSCIENCES, BANGALORE

L-Deprenyl, a specific irreversible MAO-B inhibitor has recently been shown to be effective against the cognitive deficits in Alzheimer's disease (AD). It selectively increases the dopamine levels which inturn is known to modulate the cholinergic transmission. However, there are no studies on correlating the neurochemical changes on the morphology of neurons after L-deprenyl administration in non-human primates. In the present study, L-deprenyl was administered (0.2 mg/kg/day, i.m.) to adult male monkeys (Macaca radiata) for a period of 25 days. Control monkeys received equimolar quantity of saline. The quantitative analysis of dendritic morphology of Golgi stained CA3 hippocampal and layer II-III medial prefrontal cortical pyramidal neurons were
carried out. The results revealed a significant increase in dendritic branching and intersections in both apical and basal dendrites in I-deprenyl treated group compared to controls. Thus increased dendritic arborization in hippocampal and frontal cortical neurons may be responsible for improving the cognitive functions in Alzheimer's patients after I-deprenyl treatment.

PG : 06  
SLEEP WAKEFULNESS CYCLE ALTERATIONS IN AN ANIMAL MODEL OF ENDOGENOUS DEPRESSION

M. VIJAYA KUMAR AND B.L. METI,
NATIONAL INSTITUTE OF MENTAL HEALTH AND NEUROSCIENCES, BANGALORE - 560 029

Sleep wakefulness cycle was studied on rats by creating depression in them using clomipramine. To develop the depression, rat pups were injected with clomipramine, subcutaneously twice a day at a dose of 22.5 mg/kg from day 8th to 21st. Then after 3 months, development of depression was assessed using shock induced aggressive behaviour. On the confirmation of depression, 6 hours polysomnographic recordings were carried out using EEG, EMG and EOG parameters. Results revealed that depressed rats showed decreased REM latency (P<0.001), increased number of REM episodes (P<0.05) and increased REM duration (P<0.05) compared to normal rats. However, no significant changes were observed in slow wave sleep. These results resemble the REM sleep abnormalities observed in human depressive patients, hence this model might reveal the etiology of depression.

PG : 07  
EFFECT OF SYNDREX - A HERBAL COMPOUND ON GLUCOSE TOLERANCE TEST

DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK

There are reports that fenugreek seeds have hypoglycemic actions (RAGHURAM, SHARMA, 1994, N.I.N.) so an attempt has been made in this study to find out the effect of syndrex - an extract of freshly sprouted seeds of fenugreek on G.T.T. in alloxan induced diabetic rats.

For this study 40 albino rats of both sexes weighing 200-250gm were selected and divided into 4 groups of 10 rats each.

The rats of :

Gr. 1 - Served as control.
Gr. 2 - Treated with syndrex 8gm/kg orally for 7 days
Gr. 3 - Treated with alloxan 120 mg/kg by single intraperitoneal injection.
Gr. 4 - Treated with alloxan & syndrex for 7 days.

G.T.T. was performed at the end of 1st week of drug administration. Blood samples were collected at - ½hr, 0 hr, ½ hr, 1 hr, 2 hr.

B.G.C. was estimated by - Glucose, oxidase peroxidase method in spectrophotometer.
G.T.T. was done by - Method of Hawk.

This study throws light on the beneficial effect of fenugreek on glucose tolerance in Diabetes Mellitus.
Cassava (Tapioca), a common Tropical plant, contains a cyanogenic glycoside, Linamarin. Its Neurotoxic and Pancreotoxic effects on albino rats was studied. Chronic cassava consumption for one year, altered the emotional status and autonomic functions. It also reduced the motor co-ordination. It had mild pancreotoxic effect which was indicated by changes in serum Insulin and serum Lipase levels and histological damages in the pancreas and liver.

The study was carried out in the Department of Physiology, L.L.R.M. Medical College, Meerut (U.P.). For assessment of EMG fatigue indices in first year M.B.B.S. students, two groups of eighteen males and eighen females were studied using Mega ME 3000 P system and fast fourier transform (F.F.T.) spectrum analysis program. Silver chloride disposable electrodes were attached bi-polarly over thickest part of erector spinal muscle bilaterally at L_1 - L_2 and L_4 - L_5 levels.

Sorensen's Isometric endurance test was applied to both males and females. Raw EMG was recorded as a function of time using F.F.T. spectrum analysis program and fatigue indices were calculated, which include MF (mean frequency), MPF (mean power frequency), ZCR (zero crossing rate), AEMG (average emg) was also analyzed to see the muscle condition.

Mean of rate of change of MF, MPF & ZCR was found to be higher in females than in males depicting earlier onset of fatigue in females than in males. Time in extension in performing Sorensen's test was also found to be more in males than in females. Value of AEMG was found to be lower in females than in males.

Sleep architecture was studied in adult rats by inducing epileptic seizures with amygdalar kindling. Epileptic seizures were developed by electrical kindling of anterior amygdala, with bipolar electrodes for a period of ten days. Polysomnographic recordings were carried out immediately after obtaining full fledged epileptic seizure and after 24 hours, using EEG, EMG and EOG parameters. Immediate polysomnographic records revealed that there was increase in S-II slow wave sleep, increase in number of REM episodes and duration as well as decrease in REM latency. However, after 24 hours recording showed a significant increase in S-I slow wave sleep rather than S-II while the other changes remained same. Our study revealed the resemblance of sleep abnormalities observed in human epileptic patients with regards to increase amount of S-I during interictal period.
COMPARATIVE STUDY OF EFFECT OF NIFEDIPINE AND PROPRANOLOL ON SERUM LIPID PROFILE IN HYPERLIPIDAEMIC RATS.

PATNAIK SHAKTI BALA, DAS M., PATNAIK J., DEVI P. P., MOHANTY M., PATEL D, NAYAK P., PANDA P., MOHANTY B. K., SWAIN T. R.

DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK.

Calcium channel blockers, β-blockers and Angiotensin converting enzyme inhibitors are extensively used in cardio vascular disorders. There are reports that β-blockers alter serum lipid profile and CCBS blocking the transport of Ca++ ion across the cell membrane theoretically may affect many metabolic processes, those are risk factors for coronary heart diseases.

In this study the effect of propranolol and Nifedipine on serum lipid profile in hyperlipidaemic albino rats have been observed. This is a part of the larger study—"Comparative study of the effect of the calcium channel blocker, β-blockers and ACE inhibitor on serum lipid profile of hyper lipidaemic albino rats."

For this study 48 albino rats of either sex weighing between 150-200gms were selected and divided into 4 groups (10 rats in each).

Gr. 1  -  Served as control.
Gr. 2  -  Fed with hyperlipidaemic diet.
Gr. 3  -  Fed with hyperlipidaemic diet and treated with Nifedipine 10 mg/Kg/day P.O.
Gr. 4  -  Fed with hyperlipidaemic diet and treated with Propranolol 4 mg/Kg/day P.O.

Blood sample collected and serum T cholesterol, HDLc, TG & LDLc were estimated at the end of 1st week, 2nd week and 4th week of Diet/Diet + Drug therapy.

Following methods were used for estimating lipid parameters.

ii) TG by Method developed by fossati and prencipe.
iii) LDLc by using friedwald's formula.

It was observed that hyperlipidaemic rats treated with Nifedipine show beneficial alteration in lipid profile when compared to that of hyperlipidaemic rats treated with propranolol.

SERUM ZINC LEVELS IN BRONCHIAL ASTHMA

M. KUMAR, V. AGARWAL, C. PATHAK

DEPARTMENT OF PHYSIOLOGY, L.L.R.M. MEDICAL COLLEGE, MEERUT

Trace elements are known to affect the various disease processes. Zinc and copper are the two trace elements which are studied in detail in various systemic diseases. In the present study serum zinc levels were studied in asthmatics.

Thirty patients (16 males and 14 females) of bronchial asthma were studied for serum zinc levels along with twenty five age and sex matched controls. The mean age of asthmatics was 49.60 years and of controls 50.78 years. All patients were examined thoroughly to exclude associated diseases which might affect the serum zinc levels.

Serum zinc levels in controls and asthmatics during acute attack were investigated by Dithiazone technique of Lal and Saran (1973). In asthmatics a second estimation was done after four weeks of treatment with salbutamol and theophylline. Serum zinc levels in asthmatics were 115-213 microgram/100 ml (mean 185.3 microgram/100 ml). In asthmatics after four weeks of treatment serum zinc levels were 100-200 microgram/100 ml.
ml (mean 160 microgram/100 ml). Serum zinc levels in asthmatics were found significantly increased as compared with controls. After bronchodilator treatment, the serum zinc levels in asthmatics were significantly reduced. However there was no significant change in zinc levels between asthmatic males and females. The post treatment values of serum zinc in asthmatics was still significantly higher than controls.

PG : 13 EVALUATION BY VARYING CHALLENGE STRESS LINKED ECG RESPONSES IN ASYMPTOMATIC HEALTHY YOUNG SUBJECTS

AGARWAL PRAGYA, ARORA S.R., AGARWAL SUDHA, ANEJA G.K.,
DEPARTMENT OF PHYSIOLOGY, MEDICINE & ENDOCRINOLOGY, LLRM MEDICAL COLLEGE, MERRUT.

Abnormal exercise ECGs have been documented in normal healthy asymptomatic individuals. Coronary angiographic studies have been repeatedly found to be normal in such subjects. These false positive responses are more frequently observed in females (20-30% cases) in comparison to males (5-10%).

In the present study, 34 healthy asymptomatic male volunteers, aged 18-34 years, performed a maximal exercise on computerised, driven Tread-mill. Nine out of 34 (26.4%) revealed an abnormal ECG, with ST segment depression of >0.5 mm at 80 msec after the J point in 7 subjects (20.5%) and multiple ectopic activity in 2 volunteers (5.9%) respectively. On subsequent analysis on Master's step test under manual monitoring by portable ECG machine, none of these volunteers revealed any electrocardiographic abnormality.

Conclusions therefore were made that:
1) Abnormal, exercise ECG, in healthy young male subject is much more frequent than earlier observations (26.4% vs 5-12%).
2) Master's step test falls short of benefits of simultaneous sophisticated record system and thus crude.
3) A continuous ECG monitoring with a sensitive computerised machine is the main prerequisite to detect the transient minor alterations.

PG : 14 POTENTIATION OF DEXTROSE INDUCED HYPERGLYCAEMIA BY VERAPAMIL AND ITS PARTIAL ANTAGONISM BY CALCIUM GLUCONATE IN ALBINO RABBITS.

MINI JOSEPH, S.K. TONGIA, PRADEEP PHADNIS, A.W. BHAGWAT
DEPARTMENT OF PHARMACOLOGY, M.G.M. MEDICAL COLLEGE, INDORE (M.P.) INDIA.

Calcium is involved in the release of insulin from β-cells of pancreas. Verapamil is a slow calcium-channel blocker. In the present experiment performed in overnight fasted albino rabbits (n=6) each weighing 2-2.5 kg., intraperitoneal dextrose 2 gm/kg. administration resulted in hyperglycaemia, its peak being at 30 min. (12.7 mmol/L) and normoglycaemic restoration at 120 min. (7.5 mmol/L). Pre-treatment with Verapamil 4 mg/kg intraperitoneally 15 min. before dextrose 2 gm/kg IP augmented the hyperglycaemic response at both points of time, peak (26.4 mmol/L) and restoration to normal (7.5 mmol/L). Normoglycaemia was not restored till 180 min. Pre-treatment with calcium gluconate 3 gm IP 30 min. before and Verapamil 4 mg/kg IP 15 min. before dextrose 2 gm/kg IP resulted in hyperglycaemic response with distinction. The hyperglycaemic peak (21 mmol/L) at 30 min. was lower in calcium and verapamil pretreated animals than the similar peak (26.4 mmol/L) in only Verapamil pre-treated animals. The recovery form hyperglycaemia (21 mmol/L) to normoglycaemia (5.2 mmol/L) occurred in 120 min. in animals pre-treated with calcium and verapamil whereas verapamil pre-treated animals remained hyperglycaemic till 180 min. (15.95 mmol/L).

It is apparent that Verapamil potentiates dextrose induced hyperglycaemia in albino rabbits. The Verapamil induced potentiation of hyperglycaemia is partially antagonised by calcium. Conclusively, Verapamil might be acting by inhibiting the release and calcium by facilitating the release of insulin, the former by decreasing and the latter by increasing the bioavailability of calcium in the β-cells of pancreas.
F : IA : 01  IMPROVEMENT IN DYNAMIC VENTILATORY FUNCTIONS BY UPPER AND LOWER LIMB EXERCISE TRAINING IN NORMAL HUMANS

J.M. HARSOUDA, S.K. SINGH; & S.D. NISHITH,
DEPARTMENT OF PHYSIOLOGY, P.S. MEDICAL COLLEGE, KARAMSAD-388 325 (GUJARAT)

The present study was conducted on 60 healthy young male sedentary persons, who were non-smokers and devoid of any cardio-respiratory disorder. They were divided into 3 groups of 20 each. Each group was trained for a period of 12 weeks. One group was trained involving exercise of upper limbs alone, second group was trained involving exercises of lower limbs alone and third group was trained involving exercises of both upper and lower limbs. Dynamic Ventilatory Function tests were performed on them before and after exercise training, in the morning 2 hours after breakfast. It has been observed that combined limb exercise training causes maximum improvement in dynamic ventilatory functions, followed by lower limbs exercise training alone. Upper limb exercise training alone causes minimum improvement in dynamic ventilatory functions in the subjects.

F : IA : 02  "A STUDY OF LUNG FUNCTION ABNORMALITIES IN TEXTILE WORKERS"

UTTMA MISHRA, BIPIN BIHARI PRADHAN, CHANDRA KANTA MISHRA
M.K.C.G. MEDICAL COLLEGE, BERHAMPUR

Byssinosis is a common occupational Lung disease in textile workers. Decrease in pulmonary functions preceeds the manifestations of Byssinosis (Schachter et al 1984). Reversible airway obstruction has been shown to be a characteristic finding in early Byssinosis, but chronic phage of the disease is not well defined. Although a number of workers in India (M.N. Gupta 1969, Parikh et al 1989) and abroad (Bouhuys 1969, Rylander 1983) have conducted Lung function tests in textile workers, there is no such published data in textile workers of Orissa.

So the present study was conducted in 614 permanent male workers from the spinning department of O.T.M., Choudwar, using a questionnair specially designed on the basis of schilling recommendation for diagnosis of Byssinosis and the medical research council (UK) questionnair for ch. Bronchites (Parikh et al 1989). In the second phage each worker was examined on the first working day after the week end break for 1) Anthropometic measurements, 2) Physical Examination 3) Measurement of Lung function tests like FVC, FEV, and PEFR before and after workshift.

The normal Indian predicted values for FVC, FEV, and PEFR were calculated for each subject (Kamat et al 1977). The predicted values and the observed pre and post shift values of PFT were statistically analysed and discussed.

F : IA : 03  PULMONARY FUNCTION TESTS OF RECRUITS OF POLICE TRAINING SCHOOL, INDORE

M. SHIRALKAR, M. BHANDARI, S. BOSE, H.L. JAIN,
DEPARTMENT OF PHYSIOLOGY, M.G.M. MEDICAL COLLEGE, INDORE-452 001 (MP)

This study was undertaken on 50 recruits of Police Training School, Indore with the object to study their lung function tests and compare the effect of duration of their training period on these parameters. There was increase in the values of all the variables after 2 months as compared to 0 day (FVC=3.55±0.42, 3.9±0.48; FEV1=3.39±0.29, 3.59±0.42, PEFR=7.68±2.48, 9.13±1.69; FEF 25-75% = 4.09±0.65, 4.94±1.5; MVV=147.33±27.8, 163.60±32.4).

After 10 months of training all the parameters were lowered as compared to after 2 months except MVV. These controversial results to the expected ones will be discussed.

F : IA : 04  YOGA-PRACTICES AND AUTONOMIC FUNCTIONS

KHULLAR M, BAGGA O.P. & DAS S.
DEPARTMENT OF PHYSIOLOGY, LADY HARDING MEDICAL COLLEGE, NEW DELHI - 110 001.

Over the years Yoga-Practice have gained popularity in "Stress management" and treating psychosomatic illness over the tranquilizers. Yoga has its alleged benefits of better mental and physiological health.
Enhanced sympathetic activity and increased Catecholamine secretion has been reported in anxiety provoking stressful situations, in number of scientific papers. Effects of Yoga practices on autonomic activity were studied in 12 female undergraduate medical students in department of Physiology, Lady Harding Medical College, New Delhi. Subjects were divided into two groups. Group-I: Practiced various Yoga asanas followed by a 20 minutes practice of "Shavasna". Group-II: Subjects were parameter studied were HR, B.P, GSR, EEG, Blood glucose, total lipids, cholesterol, F.F.A. Phospholipids and Urinary VMA. Baseline data was recorded at the beginning of the study and parameters repeated after 6 weeks and begin after 12 weeks of study.

A decrease in HR and B.P was recorded in the Group practising Yoga as compared to control. An increase in GSR was also observed, in practising group and their occipital EEG recorded showed enhanced "alpha" activity.

A fall in blood glucose, total lipids and cholesterol was observed in Group-I subject and their Urinary VMA value also showed a decline, as compared to the control group.

Above mentioned findings are suggestive of a reduced sympathetic activity or of an enhanced parasympathetic activity during Yoga practice.

Yoga practices by decreasing responsiveness of sympathetic nervous system to various stimuli, being about autonomic stability which alleviates stress, producing a healthy body with a sound mind.

**F : IA : 05**

**EFFECTS OF DAILY 4 HOUR WEIGHT SUPPORT IN A SIMULATED WEIGHTLESS ENVIRONMENT ON ANTIGRAVITY MUSCLES IN RATS**

P.K. JAIN, P.K. BANERJEE, N.S. BABOO, E.M. IYER

STUDY CONDUCTED AT IAM, IAF, BANGALORE

Anti Orthostatic Hypokinetic posture in rats by tail suspension for 15 days (d) is an established ground based model for simulating the effects of weightlessness on antigravity muscles. The present study evaluates the effects of daily 4 hour (h) weight support (WS) in preventing the deconditioning effects of simulated weightlessness (D-W) on Gastrocnemius-Plantaris-Soleus (GPS) muscle. Adult male albino rats were divided into three groups: (i) Control (CON), (ii) Hind limb unweighing by tail suspension for 15 days (HU), (iii) HU with daily 4h WS (4HRWS). After 15 d, contractile properties viz. peak isometric twitch contraction (Pt) and peak isometric tetanic contraction (Po) of GPS muscle were studied and the wet wt of GPS was determined. HU group showed reductions in (i) Pt (-26.8%) and Po (-12.9%) of GPS muscle and (ii) wet wt (-18.9%) of GPS muscle. Muscle atrophy during HU appears to be mainly due to reduction in the contractile protein content associated with proportionate reduction in the water content of GPS muscle. 4HRWS group showed no difference in Pt and Po as compared to CON group. However, mild reduction in the wt of GPS (-8.1%) persisted. 4h WS during HU was sufficient in completely preventing the loss of contractile protein of GPS muscles while it was not sufficient to prevent the atrophy of GPS muscle fully, probably due to persistence of some water loss as induced by HU. These findings indicate that daily 4h WS is an effective countermeasure to prevent most of the deconditioning effects of S-W on antigravity muscles.

**F : IA : 06**

**BASAL METABOLIC RATE AND BODY COMPOSITION IN THE ELDERLY**

T. N. SATYAPRABHA, S. BORGONHA AND A.V. KURPAD

NUTRITION RESEARCH CENTRE, DEPARTMENT OF PHYSIOLOGY, ST. JOHN'S MEDICAL COLLEGE, BANGALORE.

Aging is associated with a decline in Basal metabolic rate (BMR) and total energy expenditure. The extent to which changes in fat free mass (FFM) alone, explains the reduction in BMR is still unresolved. In this study, we documented changes in body composition and evaluated its contribution to measured BMR in young and elderly Indian subjects.

We compared 16 healthy elderly male subjects in the age group of 65-75 years with 16 BMI (Body Mass Index, kg/m²) matched controls in the age group of 20-25 years. Body composition measurements were determined by anthropometry, using multiple skinfolds. BMR measurements were carried out by indirect calorimetry, using a ventilated hood.

The elderly subjects were shorter than the younger controls (167.9±7.5 vs 174.8±6.7 cm; mean±SD, p<0.05) while body weight were similar (68.5±9.8 vs 71.3±9.2 kg, p=NS). The percent fat in the elderly and
control group was 28.3±3.1% and 20.6±3.5% respectively (p<0.05), while the fat free mass was 48.9±6.1 kg and 56.6±7.8 kg respectively (p<0.05). There were significant differences in the BMR between elderly and control groups (elderly; 5.91±0.54 vs control; 7.08±0.65 MJ/day, (p<0.001) but the BMR per kg FFM between the elderly (121.3±10 KJ/kg) and control group (126±9 KJ/kg) was not significant. (p=NS).

The results suggest that the age related decrease in the BMR is related to the absolute decrease in the FFM in the elderly without any change in the metabolic activity per kg FFM.

F : IA : 07 HEAT TOLERANCE OF WOMEN TO WORK IN HOT ENVIRONMENT

ANJALI NAG
NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH (INDIAN COUNCIL OF MEDICAL RESEARCH), AHMEDABAD 380 016.

Management of human heat exposures is important to safeguard human health in industrial and community environment. The upper limit of acceptable bodily strain, referred to as tolerance limit, depends on the environment, characteristics of person exposed and ones thermal state on initiation of heat exposure. The present study examines the tolerance limit of women exposed to hot environment under simulated environment in a climatic chamber.

Six young women were exposed to different combination of environmental heat (38 to 45°C dry bulb temperature; 55 to 80% RH; i.e., effective temperature ranged from 32 to 36.5°C ET), and performed ergometric work at 50 W level in different days of heat exposure. The criteria to reach at the level of tolerance are body core temperature at 39°C, the heart rate to the age-related maximum or the perceptible discomfort to continue exposure.

Upto 33.5°C ET, women show a significantly higher oxygen demand; beyond this level, a marked drop in tolerance time indicates severe limitation of women to continue exposure in heat. The body core temperature and tolerance time has significant relationships with the environment and tolerance time has an exponential decay with the increase in effective temperature.

F : IA : 08 A STUDY OF VARIATION IN THE BODY TEMPERATURE OF NORMAL SUBJECTS

S.S. SINGH, RAJ KUMAR YADAV, U.S. PANDEY
DEPARTMENT OF PHYSIOLOGY, K.G.'S MEDICAL COLLEGE, LUCKNOW.

While the "Normal" temperature in humans has been said to be 37°C (98.6°F) based on Wunderlich's original observations over 120 years ago, there is variation in the overall mean temperature for normal individuals, written in different books/literature. In the present study, we have observed the body temperature in 200 normal subjects so far. We selected the subjects among the students of MBBS 1st year and 2nd year, K.G.'s Medical College, Lucknow with the age group of 18-24 years. Their oral temperature was taken twice, by clinical thermometer, first in the morning (at around 10 A.M.), second in the evening (at around 4 P.M.). All those students who were suffering from any illness/diseases were excluded. In our study, we found that overall mean temperature was 97.4°F to 99.8°F with majority falling between 98.4°F to 99°F. The evening temperature was found 0.5° to 1°F above the morning temperature.

F : IA : 09 EFFECT OF DIETARY SPICE ON GASTRIC TRANSIT OF A STANDARD MEAL


The present study was done to assess the influence of traditional Indian dietary spices on gastric emptying time. Fifteen healthy adult human volunteers (age 25.23±5.59y, BMI 21.45±2.02kg/m2, mean+S.D.) enrolled for the study. Each subject ingested two prestandardised meals labelled with Technitinum 99 and serial dynamic pictures of meal progression were taken on a Gamma Camera. One of the radiolabelled meals contained spices (garam masala) while the other was identical in every other respect except that it was spice free. The two meals were administered in a random sequence in a crossover design. On comparing the
EFFECT OF FOUR WEEK CONSUMPTION OF DIETARY SPICE ON CARBOHYDRATE TOLERANCE

K.P. KOCHHAR, S.C. MAHAPATRA, M.G. KARMARKAR, U.SACHDEVA AND R.L. BIJLANI,
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES.

The present study was designed to assess the effects of spicy diet intake on carbohydrate tolerance. Six healthy adult volunteers (age 53±16.34y, BM1 22.8±3.63kg/m², mean+S.D.) enrolled for the study. The study involved consuming a diet containing 2.5g of 'garam masala' per day for a period of 4 weeks in a random cross over design separated by a washout period of 2 weeks. A standardized meal tolerance test (MTT) was done at the beginning, middle and end of the dietary period. The MTT was performed by giving a 50g carbohydrate portion of white bread after an overnight fast. Fasting and post prandial plasma glucose and absolute and incremental area under the 3 hour plasma glucose curve (AUC-G and AUC-G respectively) were computed. AUC-G in response to white Bread-MTT reduced after 4 weeks of spicy diet (19.45±2.14 mmol.h/1) as compared to the control value at beginning of the study (21.34+.04 mmol.h/1, P<0.04).

The peak glucose at 1 hour was also lower (7.22+.523mmol/I vs 8.14+.523mmol/l, P<0.05) at end of the study. AUC-G showed a trend towards lowering (5.44+.567mmol/l versus 5.96+.803mmol/l, p<0.19). The fasting plasma glucose level was marginally lower at the end spicy dietary period as compared to that at beginning (5.44+0.567mmol/l versus 5.96+0.803mmol/l). The improvement in carbohydrate tolerance correlated well with a reduction in glycosylated hemoglobin, the values being 5.48+0.22mg/dl at the beginning and 4.96+0.29mg/dl at the end of the dietary period (p<0.05).

F : FIA : 10 EFFECT OF FOUR WEEK CONSUMPTION OF DIETARY SPICE ON CARBOHYDRATE TOLERANCE

F : FIA : 11 CHLORPROMAZINE STIMULATES GLUTATHIONE-S-TRANSFERASE ACTIVITY IN CEREBRAL HEMISPHERES OF THE AGEING RAT BRAIN

RAMESHWAR SINGH,
PERLA VENU-GOPAL AND A. V. SRI RAM SCHOOL OF LIFE SCIENCES, J. N. UNIVERSITY, NEW DELHI - 110 067

Chlorpromazine is widely used in therapeutics for the treatment of psychiatric disorders. Besides its beneficial neurological effects, data from our laboratory and others have shown that the drug has some antiaging effects: inhibition of lipid peroxidation and of the formation of lipofuscin, activation of antilipid-peroxidant enzymes etc. Glutathione-S-transferases (GST) (EC 2.5.1.18) are a family of multifunctional enzymes that catalyze glutathione-conjugation with xenobiotics and substances produced endogenously such as lipid peroxides. Despite the importance of GST in thebiotransformation and detoxification of lipid peroxidation products, there have been extremely limited studies on GST in ageing brain. Our data from the experiments performed to study the effect of ageing on GST showed that the enzyme activity was increased markedly up to 12 months of age but decreased during ageing from 12 months to 24 months of age (ANOVA F6, 35 13.866, p<.001). Chlorpromazine (dose 10mg/kg ip.p., treatment duration 3 months, 6 months) stimulated the GST activity in 12,18 and 24 months, old animals (P<.001) 't' test compared with the corresponding control groups) while it had no effect in the animals of younger age groups. The data clearly showed that the drug reversed the age-related decline in GST activity thus contributing to antilipid peroxidant status of the brain. These data are novel and are of significance concerning the antiageing properties of the drug.

F : FIA : 12 PROTECTIVE EFFECT OF ADENOSINE AND INOSINE ON EXPERIMENTALLY INDUCED MYOCARDIAL INFARCTION IN DOGS

J. SINGH, M.C. GUPTA, P. KHOSLA, H. LAL

An evaluation of role of purine nucleosides adenosine and inosine in protection of experimentally induced myocardial infarction in dogs was studied.
Anterior descending branch of left coronary artery (LAD) was ligated in two stages in pentobarbitone
anaesthetized dogs. Adenosine (25 µg/kg/min) and inosine (5 mg/kg/min) as slow i.v. infusion were started 15
minutes before LAD occlusion and continued for six hours thereafter.

Effects of these nucleosides on ST segment changes, heart rate and ectopic activity were observed. The
extent of myocardial damage was determined biochemically by estimations of serum AST, LDH & CPK and
histopathologically.

Alterations in ECG, blood biochemistry and histopathology of the heart revealed a marked protective
effect of these nucleosides on myocardial damage.

F : IIA : 13  EFFECT OF ACUTE NORMOVOLAEMIC HAEMODILUTION ON THE DISCHARGE OF
AORTIC BARO-RECEPTORS IN ANAESTHETIZED CATS.

SNEHASIS BHUNIA & M. FAHIM

To determine the effect of acute normovolaemic haemodilution on the aortic baro-receptors discharge,
experiments were conducted in eleven anaesthetized cats. Acute normovolaemic haemodilution was induced
by replacement of blood by same volume of dextran (MW 150000). Mean arterial blood pressure, right atrial
pressure, and e.e.g. were recorded. Heart rate was calculated from e.e.g. records. Arterial blood hematocrit
was measured. Mean arterial blood pressure was not altered but pulse pressure and heart rate were increased
significantly (P<0.05) at a hematocrit level of 12.00±0.32. Average activity (spikes/sec) and the activity per
cycle of aortic baroreceptors were decreased significantly (P<0.05) from respective control values. The data
demonstrated that the sensitivity of aortic baro-receptors was decreased during acute normovolaemic
haemodilution and which could be due to augmented Na-K ATPase activity or due to the presence of some
chemicals produced by feeling of pain at the receptor level.

F : IIA : 14  AIRWAYS SMOOTH MUSCLE RESPONSES FROM VIRUS INFECTED GUINEA PIG

HUSSAIN. M.E. AND FAHIM, M
CENTRE FOR BIOSCIENCES, J.M.I. NEW DELHI - 7.

Hyperresponsiveness of the airway smooth muscle (ASM) is the most prominent functional abnormality
in Asthma and the mechanism of virus induced airway responsiveness is still an unresolved problem. In the
present investigation, the isometric contraction of ASM were recorded and the effect of two active humoral
agents, histamine and 5HT, which are known to have wide ranging action in airway narrowing and allergic
diseases were studied. The study was conducted in an organ bath, on isolated tracheal rings of GUINEA PIG,
infected with influenza virus for 24, 48 and 72 hours. In control condition, both histamine and 5HT had a strong
constrictor effect on ASM having 180% and 100% maximum effect at 10 M and 10 M concentrations respectively.
Influenza virus infected animals showed enhanced contraction in ASM to histamine having 390% maximum fect
10\(^{-5}\) M concentration trorn the normal. Respense to 5HT was however reduced after virus infection, having
maximum effect at 10\(^{-5}\) M. Several potential mechanisms like epithelial damage, cholinergic or non-cholinergic
reflexes, inflammatory mediator release etc may be involved in virus-induced ASM dysfunction.

F : IIA : 15  ANTIHYPERTENSIVE EFFECT OF ATENOLOL AND AMLODIPINE DURING EXERCISE

SAVITA SINGH, MEENAKSHI CHASWAL, RAJNISH AVASHI* & NILIMA SHANKAR
DEPARTMENTS OF PHYSIOLOGY & MEDICINE*, UNIVERSITY COLLEGE OF MEDICAL SCIENCES & GTB HOSPITAL,
DELHI-110 095.

The study was conducted to see the effect of atenolol and amlodipine on exercise activity of hypertensive
subjects. Forty mild to moderate hypertensive patients of both sexes were selected and were age and sex
matched with 20 normotensive subjects. Hypertensive patients were given 2 weeks of placebo washout period
and then they were assigned in a randomised double blind manner to receive either atenolol or amlodipine.
Isoonic exercise using Master's Step Stool technique was performed at the end of placebo washout period and
then at the end of 6 weeks of therapy with either atenolol or amlodipine. Normotensive subjects were also
subjected to the same exercise test. Results showed that Heart Rate (H.R.) and Systolic Blood Pressure (SBP) increased and Diastolic Blood Pressure (DBP) decreased after the exercise in all the subjects. But in hypertensives on placebo, the rise in SBP and fall in DBP after 6 weeks of exercise was significantly higher as compared to the normotensives and hypertensives on treatment with either atenolol or amlodipine. Whereas on comparing normotensives with hypertensive patients on treatment with atenolol or amlodipine for their post exercise HR, SBP, DBP, no significant difference was observed. So it shows that hypertension when untreated results in exaggerated response following exercise.

F : IIA : 16 ECHOCARDIOGRAPHIC STUDY OF LEFT VENTRICULAR FUNCTION IN WRESTLERS
VRUSHALI JAYANT WATVE & V.V. KANHERE

Wrestling forms a special sport activity which involves predominantly isometric muscle contraction. Considering this, left ventricular function at rest was studied, in 30 amateur wrestlers by M-mode echocardiography. 30 adult healthy medical college students of same age formed the control group. It was observed that in wrestlers, there was increase in end-diastolic volume, end-systolic volume, cardiac output, left ventricular posterior wall thickness and left ventricular mass but decrease in heart rate and ejection fraction.

It is concluded that decrease in heart rate and increase in end-diastolic volume, cardiac output, left ventricular posterior wall thickness and left ventricular mass indicate improved left ventricular function which are common findings in any athlete. However increase in end-systolic volume and decrease in ejection fraction in wrestlers may be explained on the basis of the fact that wrestling activity involves predominantly isometric muscle contraction which causes mechanical compression of muscle capillary bed. This increases peripheral vascular resistance or after load on the heart, which may persist to some extent even at rest.

F : IIA : 17 EFFECT OF ASPARTATE AND GLUTAMATE ON MYOCARDIAL INFARCTION INDUCED BY CORONARY ARTERY OCCLUSION IN DOGS.
J. SINGH, B.D. SHARMA
DEPARTMENT OF PHARMACOLOGY, ROHTAK-124001 (HARYANA)

The present study was undertaken to investigate the role of ASP and GLU in myocardial infarction induced by LAD occlusion in dogs.

In pentobarbitone (30 mg/kg, i.v.) anesthetized dogs, anterior descending branch of left coronary artery (LAD) was ligated in 2 stages. ASP and GLU (50 mg/kg, i.v.) as bolus were given 15 minutes before LAD occlusion and then as i.v. infusion (5 mg/kg/Min) for 6 hours. Effects of these drugs on ST segment changes, ectopic activity and H.R. were observed (FCG Lead II), every 15 Min. intervals. The extent of myocardial damage was confirmed biochemically (by observing the elevated serum levels of AST, LDH & CPK) and by histopathology of the heart.

The study reveals a marked protective effect of ASP and GLU in prevention of myocardial infarction. Administration of ASP and GLU Prior to LAD occlusion delayed the ST segment changes. Serum levels of AST, LDH & CPK were significantly reduced in ASP and GLU pretreated dogs. Histopathological changes were also less in ASP and GLU treated heart as compared to LAD occlusion.

F : IIA : 18 EFFECTS OF FACE IMMERSION IN COLD WATER ON BLOOD PRESSURE IN SUBJECTS WITH FIRST DEGREE RELATIVES HYPERTENSIVE
S.R. SARDESSAI, A.S. BORKER & M.E. ABRAHAM

90 subjects of both sexes in the age group of 18 to 22 years were taken for this study. Of these 45 subjects had first degree relation hypertensive and served as experimental group while remaining 45 did not have any first degree relation hypertensive and served as controls. Their basal blood pressure was measured by auscultatory method. All of them were found to be having normal blood pressure, though the basal blood pressure (both systolic and diastolic) was insignificantly higher in the experimental group. Then each of these subjects were asked to immerse their face (from hairline on the forehead to chin) in water at 20°C and keep
it for 30 seconds during which time their blood pressure was recorded. Finally these subjects were asked to
immerse their face in water at 10°C for 30 seconds and their blood pressure was recorded. On immersing the
face in water at 20°C both systolic and diastolic blood pressure was increased in both groups. In control group
the increase in systolic blood pressure was just significant compared with basal while increase in diastolic blood
pressure was not statistically significant. In experimental group both increase in systolic and diastolic pressure
was significant compared with basal (P<0.01). Similarly on face immersion in water at 10°C the increase in
systolic and diastolic blood pressure was just significant in control group (P<0.05) while in experimental group
it was highly significant. (P<0.001)

F : II A : 19 STUDY OF SYSTOLIC TIME INTERVALS IN HEALTH, IN DIABETES MELLITUS AND IN
ALCOHOLICS
M.S. PATWARDHAN,
GOVERNMENT MEDICAL COLLEGE, MIRAJ, MAHARASHTRA

Systolic time intervals were recorded in 80 individuals. Control group consisted of 40 males and 10
females. Study group consisted of 30 subjects suffering from Diabetes mellitus and Alcoholics. Left ventricular
function can be assessed by recording systolic time intervals.

PEP/LVET ratio in healthy males and females between age group of 18 to 55 years is same. PEP/LVET
ratio is increased in diabetics, alcoholics and diabetics consuming alcohol.

Key words: PEP : Pre ejection period. LVET : Left ventricular ejection time.

F : III A : 20 A STUDY OF SERUM BILIRUBIN CONCENTRATION IN CORD BLOOD IN RELATION TO
ABO BLOOD GROUP OF MOTHER
NEENA SRIVASTAVA, U.S. PANDEY, G.K. MALIK
DEPARTMENT OF PHYSIOLOGY & PAEDIATRICS, K.G.M.C., LUCKNOW.

In the present study, serum bilirubin estimations were done in cord blood and subsequently on day 3 and
5 of life in healthy neonates. A total of 122 neonates were studied. Cord Blood Serum bilirubin concentration
in relation to ABO blood group of the mother was observed. It was found that the higher cord serum bilirubin
concentration in relation to ABO blood group of the mother was observed. It was found that the higher cord
serum bilirubin concentration was seen with maternal blood group 'O' (1.27±0.57mg/dl). The values observed
with maternal blood group 'A', 'B' & 'AB' were 1.23±0.63 mg/dl; 1.21±0.48 mg/dl; 1.20±0.51 mg/dl respectively.
When values cord blood serum bilirubin concentration of neonates with maternal blood group 'A', 'B'
& 'AB' were compared with values of maternal blood group 'O', it was observed they were not significant statistically.

F : III A : 21 RELATION OF SPECIFIC BLOOD GROUP SUBSTANCES IN SALIVA TO TASTE BLINDNESS
SHOBHA CHANDRAKANT NALLULWAR & V.A. KATTI
A study was conducted on 450 humans of either sex, to know relation between secretor-nonsecretor
status and taste blindness to phenylthiocarbamide, as the occurrence of secretor/non-secretor and taster/non-
taster is gene dependent and saliva plays important role in the perception of taste sensation. It is observed
that 62.65% of the secretors and 66.10% of the non-secretors are tasters. However this difference is not
significant which indicates that there is no relation between the presence of specific blood group substances
in the saliva and taste sensation for phenylthiocarbamide.

F : III A : 22 STUDY OF ANTICOAGULANT ACTIVITY OF INJ. LIGNOCAINE
VU. NARSAPUR
DEPARTMENT OF PHARMACOLOGY, AL-AMEEN MEDICAL COLLEGE
BIJAPUR - 586 108.

The anticoagulant action of 2% Inj. lignocaine was studied in vitro and in vivo. In vitro, whole blood
clotting time was studied in 33 healthy individuals (22 Men & 11 Women) aged between 22-50 years by Lee-
In vivo study was done in ten albino rats by giving 2% Inj. lignocaine (0.1 ml) intravenously, in to the rat tail vein and coagulation time was recorded by slide method. The present study revealed that Inj. lignocaine Possesss anticoagulant activity in vitro and in vivo. It also suggested that in vivo Inj. lignocaine (0.1 ml) along with inj. heparin (20 u/kg) increased the duration of coagulation time markedly when compared with normal clotting time (NCT) and in animals treated with the drug Inj. lignocaine. This study also suggests that use of the combination of Inj. lignocaine (0.1 ml) and inj. heparin (20 u/kg) may be beneficial clinically to reduce the dose requirement and toxicity of inj. heparin in conditions like deep vein thrombosis in pregnancy and infancy, cardiac catheterisation, cardiac surgery and aortic thrombosis etc. Dose titration and toxicity study in human beings require further clinical trails.

F : III A : 23 HAEMATOLOGICAL PICTURES AND ITS CO-RELATION WITH POLMONARY FUNCTION TEST IN IRON DEFICIENCY ANAEMIA BEFORE AND AFTER TREATMENT

NIRUPAMA RAY, ANUPAMA PANDA, D.N. MOHARANA
S.C.B. MEDICAL COLLEGE, CUTTACK

Since the incidence of iron deficiency anaemia (IDA) is common in Orissa, the co-relation of IDA with pulmonary function tests (PFT) are studied before and after therapy with different haematinics.

Haematological delineations like total RBC count, Hb gm%, PCV, Reticulocyte count along with serum iron values are estimated in fifty normal subjects of both the sex before and after therapy with vit.B12, Folic Acid and oral iron administration for 10-15 days.

Pulmonary function studies such as FVC, FEV1, FEV1/3, PEFR, M.V.V., Flow/Volume and Flow/Time are studied by electronic device named "Medispiror" of the above control subjects and anaemic patients before and after treatment.

Symptomatology and relevant sings are revalidated.

Statistical evaluation done and results are studied.

There is statistically significant decrease of haematological parameters and pulmonary function tests between control and anaemic patients of same age group of both the sexes.

The serum iron values of anaemic subjects are lower than those of control standardizing it to be due to deficiency of iron.

Significant increase of mean FVC and MVV values (P<0.5) observed after treatment when their haemoglobin values improved. But the mean values of PEFR, FEV1, FEV1/3 are not significantly raised in all the patients after treatment albeit an increase is registered in some cases.

F : III A : 24 CHANGES IN FIBRINOLYTIC ACTIVITY OF BLOOD AFTER PROSTATECTOMY

B. UDAYASHANKAR
ASSOCIATE PROFESSOR, DEPARTMENT OF PHYSIOLOGY, MANGALORE - 575 001.

Prostatectomy has been reported as one of the important causes of defibrination syndromes which leads to, hypofibrinogenemia and hemorrhage. It may be possible that the change in fibrinolytic activity also is responsible for the defibrination syndrome. The objective of present study is to find out these changes in patients undergoing prostatectomy.

Patients were divided into two groups. Group-I (n=29) Patients, had moderately enlarged prostate glands and group-II patients (n=17) had large prostates. The controls were normal subjects, aged 58 to 70 years. Blood samples of controls and both groups of patients before and after operation were studied using following tests:

1. Euglobulin lysis time - To find out plasminogen activator level.
2. Plasminogen assay.
3. Fibrinogen estimation.
The post operative blood, in both groups of patients showed a statistically significant decrease in euglobulin lysis time, compared to the pre-operative and control blood. This showed an increase in plasminogen activators level. Plasminogen levels were significantly increased in post operative cases of group-II than that of pre-operative. This suggests, release of large quantity of plasminogen into blood. The fibrinogen content of group-II, showed significant decrease statistically, after operation, when compared to pre-operative samples.

These results clearly suggest that there is significant increase in fibrinolytic activity of blood after prostatectomy leading to hypofibrinogenemia and clotting defects. The bleeding which results may become fatal.

F : III A : 25 HEMATOLOGICAL ALTERATIONS FOLLOWING SHORT TERM EXERCISE PROGRAMMES IN HEALTHY YOUNG ADULTS

S. MOHARANA, D.N. MOHARANA & A.C. PRADHAN

Many workers throughout the globe observed significant haemostatic fibrinolytic changes following short term exercise programmes. There has been changes also in the formed elements of blood. Keeping this in view, the present work was undertaken in the Physiology Department of S.C.B. Medical College, Cuttack to look into the insight of all those haemotological alterations following short term exercise. 37 young healthy medicos with a mean age of 20.2 years, mean height of 171.6 cm. and mean weight of 52.7 kg. were taken as subjects. They were subjected to Harvard's steps test @ 30 cycles per min. for 5 minutes or till exhaustion whichever was earlier. Blood samples were drawn for the required tests before and after exercise and accepted methods of analysis were utilised.

To conclude, there has been an increase in the TRBC, TWBC, Total Platelet count following exercise whereas PT and CT showed a fall.

Statistical analysis done and the reviewed in the context of suitable literatures.

F : III A : 26 ESTIMATION OF HAEMOGLOBIN BY TWO DIFFERENT METHODS IN KAMOTHE HOSPITAL M.G.M. MEDICAL COLLEGE, KAMOTHE, NEW BOMBAY

A.P. MAHINDRAKAR & P. BALSUBRAMANIAM
M.G.M. MEDICAL COLLEGE, KAMOTHE, NEW BOMBAY

Novi Mumbai is endemic area for Malaria and incidence of anaemia and associated complications are acute high and anaemia is also known to effect the course of other diseases.

We have estimated Haemoglobin Concentration by two different methods direct colourmetric method and filter paper method in Random samples of Blood collected inpatients from Kamothe Hospital, New Bombay attached to M.G.M. Medical College. Age group of male patient was from 10 years to 78 years and female patient from 16 years to 80 years.

The Haemoglobin Concentration in men was 12.34±.95 and 11.93±3.0 (Mean ± SD) with direct method and filter paper method. The Haemoglobin Concentration in women was 12.72±2.17 and 12.33± 1.89 (Mean±SD) with direct method and filter paper method.

There was no significant difference in the Haemoglobin Concentration with both the methods of Estimation. This study suggests that filter paper method with is easier to perform is also a good method for Haemoglobin Estimation.

F : III A : 27 BLOOD LACTIC ACID AND PHYSICAL FITNESS INDEX IN ATHLETES AND NONATHLETES

SAHU MINATI, DEVI S., PARIDA B.
SC.B. MEDICAL COLLEGE, CUTTACK.

The maximum activity level of a normal healthy individual is limited by many factors. In order to have a quantitative assesment of the Physical ability of an individual physical fitness index (PFI) is taken as an acceptable method. Astrand (1956) and S. Chatterjee (1986) have also correlated PFI with VO₂ max and basal
heart rate. It is known that lactic acid (LA) concentration increases due to anaerobic contraction of muscle. No correlation of PFI with LA level has been reported. The present work is undertaken to assess the correlation between PFI and LA level in athletes and Nonathletes.

60 healthy Volunteers between age group of 18-22 years were selected. Out of which 30 are Athletes and 30 are nonathletes. The physical fitness index (PFI) is calculated by modified Harvard step test. LA concentration of blood was estimated by Barker and Summerson method. In all cases LA concentration of blood increased 3 minutes after Harvard step test. Lactic acid fold increased after exercise were compared between athletes and nonathletes and found highly significant. A good correlation is found between PFI and LA fold increased after exercise in athletes and non-athletes, and their Correlation Co-efficient index is highly significant.

F : IVA : 28 NUTRITION AND REPRODUCTIVE HEALTH.

PADMA BALA SUBRAMANAM

The meaning of the term reproductive health has been extended beyond the confines of the health of the woman during child bearing and child rearing (Cairo convention on Planned Parenthood 1994). It encompasses her health right from conception right up to the grave. The non reproductive years namely during the time she is merely a female fetus, a female infant, a girl child, an adolescent girl, a young and then an elderly woman are highly significant in the overall picture of an healthy woman. Taking care of her health medically as well as ensuring a compatible socioeconomic, educational, political scene in which she can blossom is the need of the hour. Her claim to human rights including the choice to bear healthy child as and when she likes is being discussed in this paper. Particularly the effects of malnutrition which is the thread running through the whole fabric of her life is highlighted. Various measures to prevent and protect the women from poverty, both food and thought are analyzed.

F : IVA : 29 A STUDY OF PULMONARY FUNCTIONS AND THEIR CORRELATION WITH NUTRITIONAL PROFILE OF MALE CHILDREN BELONGING TO EAST DELHI

PRATIBHA GUPTA, AMIT KUMAR & SUCHITRA RAO

The present study is comprised of, hundred male children from East Delhi, aged 5-12 years were, divided into four groups: group-I (age: 5-8 yr.) and group-II (age: 9-12 yr.) from middle class and group-III (age: 5-8 yr.) and Group-IV (age: 9-12 yr.) from lower socio-economic strata; each group consists of twenty five children. Details like number of total earning members and their monthly income, household area to live (HAL, ft²), fuel used for cooking, number of smokers in the family and child’s immunisation status were collected in the standard questionnaire. Anthropometric measurements including height, weight, body surface area and skin fold thickness to measure the total body fat (TBF, kg), the fat percentage (PF, %) and the fatless tissue (FT, kg) were assessed. Pulmonary function tests including forced vital capacity (FVC, L), forced expiratory volume in 1 sec. (FEV L), peak expiratory flow rate (PEER L/min) were measured by using P.K. Morgan’s pocket spirometer (P.K. Morgan, Pvt. Ltd., England) and Empy index was worked out. All the collected data was analysed using the statistical package “SPSS version 5.0”. The obtained results reflected that children belonging to group-III & IV (lower socio-economic status) had poor nutrition and immunisation amongst them, along with decreased values of lung function results as compared with other groups. They were found to be living in vulnerable conditions, perhaps these worst environmental conditions are causative factor for their poor health.

F : IVA : 30 STUDY OF URINARY INDOL - ACETIC ACID LEVELS IN FEMALES SUFFERING FROM PRE-MENSTRUAL SYNDROME

SUNITA TIWARI, NAR SINGH VERMA, NEERJA SHUKLA, R.K. SINGH
DEPARTMENT OF PHYSIOLOGY & BIOCHEMISTRY, K.G's MEDICAL COLLEGE, LUCKNOW.

Pre-menstrual syndrome is a group of signs and symptoms exhibited by a large population (70%) of women of reproductive age group (20-40 years) during different phases of menstrual cycle, more often in the
luteal phase. During this period, gross changes in the behaviour of the females have been observed besides the somatic changes like headache, nausea, vomiting, fluid retention breast tenderness etc. In extreme cases depression or anxiety may be a prominent feature along with aggressiveness hysterical spells and even suicidal tendency has been observed.

Previous studies correlated these changes with alteration in the level of the female sex hormones but researchers believe that there are more to it than merely the sex hormone level. The psychological changes may be due to change in the level of the monoaminergic neurotransmitter like 5 HT. In order to ascertain their role, this study has been undertaken to assess the level of indol acetic acid in the urine sample of women suffering from pre-menstrual syndrome.

F : IVA : 31 NEW DEVELOPMENTS IN MALE CONTRACEPTION : USE OF LONG ACTING ANDROGENS

M. RAJALAKSHMI
DEPARTMENT OF REPRODUCTIVE BIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI 110 029.

The biomedical options for the regulation of male fertility include five main points of intervention in the male reproductive tract. These include: (1) the inhibition of spermatogenesis in testis; (2) inhibition of sperm maturation in the epididymis; (3) interference with sperm transport along the male reproductive tract; (4) prevention of sperm deposition in the vagina; and (5) prevention of fertilization in the male reproductive tract. Inhibition of spermatogenesis using hormonal agents has been an attractive option for scientists and includes the use of androgens alone or in combination with other antispermaticogenic agents. Testosterone enanthate has been used in multicentre clinical trials to arrest sperm production but its use suffers from many disadvantages including the need for frequent injections and production of unphysiological androgen levels. This has necessitated the need for the development of long acting androgens such as testosterone bucylate. The effects of administration of small doses of testosterone bucylate to adult bonnet monkeys on sperm count, sperm motility and the ability of sperm to penetrate artificial cervical mucus was correlated with changes in circulating levels of androgens. These data indicate that testosterone bucylate, the long acting injectable androgen, suppresses sperm functional parameters even before inducing arrest of spermatogenesis.

F : IVA : 32 EFFECT OF TOBACCO CONSUMPTION ON SEMEN QUANTITY AND QUALITY IN MEN OF REPRODUCTIVE AGE GROUP

NAR SINGH VERMA, M. MEHROTRA, S. TEWARI, U.S. PANDEY, S.S. SINGH, N. SHUKLA, MAHADI HASAN
DEPARTMENT OF PHYSIOLOGY, KING GEORGE'S MEDICAL COLLEGE, LUCKNOW - 226 003. DEPARTMENT OF PHYSIOLOGY & MICROBIOLOGY, K.G'S MEDICAL COLLEGE, LUCKNOW, BORA INSTITUTE OF MEDICAL SCIENCES, LUCKNOW.

Smoking and use of tobacco is declining in developed world mainly due to more awareness about its detrimental effect, but in our country the use of tobacco is increasing day by day. Tobacco smoke contains 4000 different chemicals of which 43 are carcinogenic. Different diseases like bronchitis; Bronchogenic Carcinoma and other cancers; Ulcers, Heart disease, Stroke etc. have been related to smoking and use of different form of tobacco. In this study a comparatively new aspect of tobacco use have been studied. The effect of tobacco use for long time on quantity and quality of semen was studied. The semen samples of 40 tobacco users and non-users (10) were examined.

F : IVA : 33 FREE RADICALS LEVEL IN PREMENSTRUAL, MENSTRUAL AND POST MENSTRUAL PHASES

SHRADDHA SINGH, SUNITA TEWARI, U.S. PANDEY, S.S. SINGH, N. SHUKLA, RAJ KUMAR YADAV
DEPARTMENT OF PHYSIOLOGY, K.G's MEDICAL COLLEGE, LUCKNOW.

Menstruation is cyclical loss of blood in the females of reproductive age group by sudden reduction of the oestrogens and progestrone levels in the blood. During this period the females are under a physiological stress. In recent years scientists have shown much interest in the role of free radicals and others in various
In view of this, the present study was designed to investigate the level of lipid peroxides and superoxide dismutase in serum of the subjects. Hundred females between the age group of 20-40 years having normal menstrual cycle were selected on random basis from K.G’s Medical college, Lucknow. Standard procedures were followed to estimate the level of lipid peroxides and superoxide dismutase. An increased level of oxidants was observed, during menstruation, which was statistically significant also.

**F : IVA : 34 ALCOHOL AND GASTRIC MUCOSAL DEFENCE SYSTEM IN ALBINO RATS.***

**SWAGATA RAY, A.K. GANGULY, KRISHNA MUKHOPADHYAYA**

DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICINE, UNIVERSITY OF CALCUTTA, 244B, A.J.C. BOSE ROAD, CALCUTTA - 700 020.

The algebraic sum of two opposite forces i.e. aggressive and defensive, determines the development of gastro-duodenal mucosal ulcer. But till the end of 1970’s most of the work that has been done is on aggressive system i.e. on acid peptic activity. It was realised only after then that mucosal defensive system is more important than aggressive forces, so far the gastro-duodenal mucosal injury is concerned.

Our earlier wk clearly indicates that gastric irritants like aspirin and alcohol have a profound influence on gastric adherent mucus and gastro-duodenal epithelial neutral polysaccharide content. Indeed, with acute alcohol treatment there was profound decrease in mucosal buffer system, whereas, with chronic alcohol treatment not only there was thickening of gastric mucosa but also there was increase in both gastric adherent mucus content and epithelial neutral polysaccharide content.

In order to assess whether prostacyclin is involved in influencing the alteration of mucosal pattern, the present study was undertaken.

The result clearly indicates that percentage inhibition of ADP induced for human platelet aggregation by gastric tissue prostacyclin following 60% ethanol for a day had been quite high but the same, following 7% ethanol treatment chronically could cause still higher percentage of inhibition meaning thereby, that chronic alcohol treatment had caused increased mucogenesis since prostacyclin is known to enhance the process. The result will be discussed.

**F : IVA : 35 EFFECT OF PREGNANCY ASSOCIATED HYPERTENSION ON MATERNAL AND CORD BLOOD IMMUNOGLOBULIN***

**PRANATI NANDA, ANUPAMA PANDA, S.K. SATPATHY, J.R. PATNAIK**

Twenty cases of pregnancy associated hypertension who developed hypertension after 20th week of gestation were taken up for the study of serum IgG and IgM.

Cases who were having hypertension due to renal or endocrine cause were excluded from study. Twenty normal pregnancy cases without complication formed the control group.

The mean serum IgG and IgM values in normal controls were 992.86±116.09 mg/dl and 136.0±46.01 mg/dl respectively. The study group of PAH cases had a significantly lowered IgG value of 721.5±151.2 mg/dl. In this group mean maternal IgM value was 123.9±45.72 mg/dl and was not significantly altered.

Cord blood serum IgG values were 1020.75±76.93 mg/dl and 976.17±27.51 mg/dl respectively in control and PAH cases and the difference was insignificant. Cord blood serum IgM values in both groups did not show any significant difference.

We conclude that there is significant lowering of maternal serum IgG in PAH cases. Different postulations are given for this change and needs further study.

But cord blood IgG is not significantly altered in babies of PAH mothers. This may be because of placental selective transfer of IgG.

**Abbreviations :**

<table>
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<tr>
<th>PAH</th>
<th>Pregnancy Associated hypertension</th>
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<tr>
<td>IgG</td>
<td>Immunoglobulin G</td>
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<tr>
<td>IgM</td>
<td>Immunoglobulin M</td>
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STUDIES ON CYCLIC CHANGES IN LYPOSOMAL ENZYMES OF SALIVARY GLANDS IN WOMEN

Bharati Tiwari, B.V. Reddy & J.J. Kulkarni
VM. Medical College, Solapur, Maharashtra

Because of their diverse functions, salivary glands have become very fascinating material for biological research work. In animal like rat, rabbit etc., their sexual dimorphism especially related to enzymes is now an established fact. Same enzyme hormonal relationship exists in human being also. The salivary secretion is certainly controlled and modified by circulating hormones. Especially it shows direct correlation with sex hormones.

In the present work, three important lysosomal enzymes viz. B-glucuronidase, Acid Phosphatase and esterase have been selected to study the hormonal regulation of salivary secretion. The work is carried on women of various age groups i.e. from 5 years to 70 years old. The enzymes are estimated biochemically by well established methods. The results are studied with reference to age and reproductive cycle of women.

A definite correlation is exhibited by sex hormones (as indicated by age and phase of menstrual cycle) and all three enzymes. They almost show parallel relationship. But existence of more specific relationship is indicated between those enzymes in saliva and estrus by ovaries. It seems that estradiol is more responsible for cyclic changes in salivary enzymes than LH or progesterone.

This enzyme - hormone coupling and possible influence of other hormones is discussed in detail.

EPIDERMAL GROWTH FACTOR RECEPTOR IN BENIGN HYPERTROPHY OF PROSTATE

Kumar V.L., Majumder P.K. & Wadhwa S.N.
Departments of Pharmacology & Urology, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-110 029 (India)

Epidermal growth factor (EGF) is a powerful mitogen which has been demonstrated to stimulate proliferation of rat prostate epithelial cell population. It is one of the growth factors that are implicated in the pathogenesis of benign hypertrophy of prostate (BPH) in humans. The biological effects of EGF are mediated through interaction with specific plasma membrane receptor. Deregulated expression of EGF receptor (EGFR) has been seen in a variety of tumors either as a result of gene amplification or structural alterations. Using slot-blot analysis we have detected the level of EGFR mRNA in normal prostate and BPH tissue and find that it is elevated in BPH as compared to normal prostate. Further, to understand the mechanism of this overexpression we analyzed the genomic DNA of BPH samples for EGFR gene amplification and polymorphism. Our results indicate that the EGFR gene was amplified in one out of thirteen samples and was polymorphic in one out of three samples that we have analyzed (supported by CSIR & AIIMS, PKM is a CSIR SRF).

TOTAL SERUM LEVELS OF T₃, T₄ AND TSH AMONG SCHOOL GOING CHILDREN FROM AN ENDEMIC IODINE DEFICIENT AREAS OF NORTH EAST INDIA.

T.C. Saikia, Chiranjay Thakur
(Research fellow, Thyroid Project), Alameen Medical College, Bijapur.
(Project was supported by Board of Research in Nuclear Science DAE, Govt. of India No.4/8/88-G at Assam Medical College, Dibrugarh).

Endemic Goitre, cretinism and mental retardation are widely prevalent in a chronic environmental iodine deficient sub Himalayan region of North East (Raman et al 1959, ICMMR 1989).

To evaluate the thyroid hormonal status in such an environment among school children (Age 8-17 yrs), the present work had been designed. 832 numbers of children; male-144 numbers; female-688 numbers, were selected randomly from different schools of four contiguous districts of the region. 209 number of healthy medical students (18-25 years) male-78 nos; female-131 nos; served as euthyroid control.

Total serum levels of T₃, T₄ were estimated by RIA technique (Barsen and Yallow), TSH by Immunoradiometric assay (IRMA) method. All kits were supplied by Radipharmaaceutical division, BARC, Bombay.
**T₃, T₄ serum levels were expressed ng/ml; and Tsh μIU/ml.**

The mean serum levels of T₃, T₄ and TSH in euthyroid control were 1.69 ng/ml; and 1.52 μIU/ml against school children's value of 1.52 ng/ml; 83 ng/ml and 1.91 μIU/ml respectively.

1. T₃, T₄ values were recorded lower and TSH higher in school children than control.
2. All values in male control were higher than female control.
3. In pubertal group mean T₃ and TSH levels showed higher in male, T₄ did not show any difference between male and female.

Our control euthyroid subjects serum levels of T₃, T₄ and TSH compare favourably with euthyroid control values from different countries and India. Normal higher values in male of all three indicate higher metabolic activities in male than female. Lower T₃, T₄, higher TSH values in school going children from endemic iodine deficient areas are suggestive of hypothyroid state.

Results are discussed in view of chronic iodine deficiency in the Region.

**F : IB : 39  SERUM GONADOTROPINS (FSH, LH) AND THYROID HORMONE (T₃, T₄) PROFILE IN FEMALES OF NORTH EASTERN REGION OF INDIA.**

WASIMA JAHR, GEETA BARUAH, M. RAHMAN, M.S. ALI,
DEPARTMENT OF PHYSIOLOGY, ASSAM MEDICAL COLLEGE, DIBRUGARH, REGIONAL CENTRE BRIT/DAE (DEPARTMENT OF ATOMIC ENERGY), TUMOUR REGISTRY ICMR-ASSAM MEDICAL COLLEGE, DIBRUGARH.

A preliminary study was carried out to evaluate the normal reference values of serum gonadotropins (FSH, LH) along with thyroid hormones (T₃, T₄) in the females of North Eastern region of India. A total of 44 healthy females aged between 18 and 20 years with normal menstrual history of cycle length between 24 and 34 days were subjected to blood sampling during the three different phases of cycle (Menstrual, Follicular and Luteal phases).

The serum FSH level estimated in three different phases were quite consistent and were found to be 2.18/L + 0.50, 2.46/L + 0.61, and 2.38/L + 0.97. Serum gonadotropins LH varied widely; the maximum peak was estimated during the luteal phase (2.63mIU/ml + 2.07, 10.41 mIU/ml + 7.42 and 13.92 mIU/ml + 17.63). The level of thyroid hormones in all the females under study were within normal limit (T₃ 1.28 ng/ml + 0.44 and T₄ 110.32 ng/ml + 24.72).

**F : IB : 40  EFFECT OF SMOKING ON THYROID STATUS IN DEPRESSION**

P.N. SINGH, JALAJ SAXENA, A.Q. SIDDIOUI, UMA SRIVASTAVA,

Depression is known to be associated with high incidence of smoking. Several reports suggest the sub-clinical hypothyroidism in cases of depression. Smoking is also known to induce hypothyroidism due to its thiocyanate content. Therefore, we planned to study the effect of smoking as a contributory factor of sub-clinical hypothyroidism in cases of depression.

The T₃, T₄ and TSH levels in 15 male smokers and 10 male non smokers was estimated. The results indicate significant decline in T3 levels and significant increase in T4 levels in smokers as compared to non smokers depression patients. But this study does not show any significant alteration in TSH levels of smokers from non smokers. The implications of these finding will be discussed.

**F : IB : 41  A STUDY OF HAEMATOLOGICAL PARAMETERS IN HYPOTHYROID DISORDERS**

MANDAKINI RAY, UTTAMA MISHRA, SANTOSH KUMAR PATNAIK
DEPARTMENT OF PHYSIOLOGY, M.K.C.G. MEDICAL COLLEGE, BERHAMPUR, GANJAM, ORISSA.

Hypothyroid disorders associated with anaemia is a common finding in clinical practice. Various workers have observed macrocytic or iron deficiency anaemia in such cases. There was high incidence of pernicious

Though hypothyroid disorders are common in our place, there is lack of published data regarding the haematological values in such cases. The present work has been undertaken to add valuable information regarding such data.

Thirty patients with hypothyroid disorders admitted to M.K.C.G. Medical College Hospital were selected. Their clinical diagnosis was confirmed by 131 I uptake test and estimations of T_{3}, T_{4}, levels, P.B.I. B.M.R. and serum cholesterol. Haematological values like TRBC count, haemoglobin concentration and packed cell volume were determined by routine laboratory methods. Them M.C.V. and M.C.H. were calculated.

The values were statistically analysed and the results were discussed.

F : IB : 42

IMMUNOSUPPRESSIVE FACTOR IN NON-PREGNANT NORMAL AND ABNORMAL HUMAN PREGNANCY.

JHA, P., SALEEM, M.A. AND FAROOQ, A.

DEPARTMENT OF REPRODUCTIVE BIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110029.

Immune mechanisms play an important role in determining the outcome of pregnancy. Some of the immunological causes documented in abnormal pregnancies include increased HLA compatibility between mother and foetus, hyperactivity between maternal and paternal lymphocytes, absence of blocking antibody formation and lack of IgG type antibody which is present in normal pregnancy. The present study was designed to analyse the immunosuppressive fraction in sera from non-pregnant normal and abnormal pregnancy. IgG factors were separated using 35% ammonium sulphate precipitation, DEAE ion-exchange and Protein-A sepharose chromatography from normal and abnormal pregnancy sera. The results indicated that IgG fractions from non-pregnant and normal pregnant women showed suppressed mitogen induced lymphocyte transformation whereas threatened abortion and multigravidae did not show any suppression. The present study indicated that the isolated IgG fraction may contain antibodies produced against paternal antigen. These antibodies act as blocking antibodies and play a role in the mainaince of pregnancy.

F : IB : 43

"GAMMA AMINO BUTYRIC ACID (GABA) IN RELATION TO CARCINOMATOUS GROWTHS".

MAUSUMI BANDOPADHYAY, RATNA CHANDA, A.K. GANGULY

DR. B. C. ROY POSTGRADUATE INSTITUTE OF BASIC MEDICAL SCIENCES, UNIVERSITY OF MEDICINE, UNIVERSITY OF CALCUTTA, 244B, ACHARYA J.C. BOSE ROAD, CALCUTTA-700020.

Although there are conflicting reports regarding association of polyamines and Di-amine Oxidase (D.A.O.) activity with carcinomatous growths, weightage of evidence goes in favour of the fact that the synthesis of diamines like histamine, putrescine and cadaverine and polyamines like spermine and spermidine along with Di-amine Oxidase (D.A.O.) increases in carcinomatous growths. Mother substance for the members of di- and polyamine family is putrescine, synthesizing enzyme being Ornithine de carboxylase (O.D.C.). In view of correlation drawn between Ornithine de carboxylase (O.D.C.) and Gamma-Amino Butyric Acid (GABA) and as GABA has been shown to have a stimulatory effect on O.D.C., the present study was undertaken to establish whether GABA is in any way related to carcinomatous growths.

It was found that GABA concentration of the carcinomatous tissues (uterine, ovarian, breast and rectal) was significantly high. GABA content was also found to be increased in urine and serum of these patients. An attempt has been made to explain these findings.
Calcium ions act as intracellular messengers and mediate the response of α-adrenergic and muscarinic receptors. Hoffmeister et al. (1982) reported that nimodipine modifies reserpine evoked catalepsy in rodents. In recent past nifedipine has been tried and found useful in many diseases of CNS.

Charlie's Foster Strain of albino rat (125 to 150 g) of either sex were divided in two groups of six rats each. Experimental group received nifedipine (3 mg/kg, i.p.) once daily for 28 days, while control group normal saline (0.1 ml, i.p.) for the same duration. Twenty-four hours after the last dose of nifedipine, trifluoperazine (2.5 mg/kg, i.p.) was administered and mean cataleptic score was observed after 2, 4, 6 and 22 hr. The mean cataleptic score in nifedipine treated group was significantly high after 6 hrs. (P<0.05). The cataleptic activity increased with the passage of time and continued till 22 hrs. (P<0.01) till when the effect was monitored. The mean cataleptic score at six hr. was 1.1 ± 0.34 in control and 2.5 ± 0.501 in nifedipine treated group while it was 0.5 ± 0.118 in control and 2.6 ± 0.295 in experimental group at 22 hr.

The effect may be due to inhibition of central dopaminergic system by nifedipine. This needs further exploration.

BR-16A (MENTATR™) is a herbal medication which has shown promise as a cognition enhancer. This study was undertaken to test the effect of BR-16A on aluminium-induced cognitive deficits and cognition in aged rats. Aluminium chloride (1000 mg/kg/day) was administered to wistar rats for 40 days to produce cognitive deficits as tested on a one-trial step-through passive avoidance task. Aluminium-treated rats received BR-16A (100 mg/kg/day) for 20 days from day 20 onwards. In a second experiment aged wistar rats (12 months) received BR-16A (100 mg/kg/day) or vehicle for 20 days. The rats were tested on a one-trial step-through passive avoidance paradigm. BR-16A significantly prolonged the shortened latency of step-through induced by aluminium administration. This suggests that it ameliorated the impairment of learning behaviour induced by subchronic aluminium administration. BR-16A also significantly improved retention of learning in aged rats as shown by prolongation of retention latency. These results confirm the nootropic effect of BR-16A and indicate the possibility of its efficacy in age-related mental decline and senile dementia.

Clomiphen an oestrogen antagonist has been reported to possess anticonvulsant activity, whereas no such activity has been reported with another oestrogen antagonist, tamoxifen. Hence the present study was undertaken to probe the anticonvulsant activity if any, of both the antioestrogens and also to know their possible interaction with phenytoin, an established anticonvulsant.

Female albino rats (150-200g) showing +ve HLE in MES test were divided into 3 groups (n=6 in each).

Group-I received saline (control) whereas remaining two groups received either clomiphen (2.7 mg/kg) or tamoxifen (9.9 mg/kg) i.p. for 10 days. From 6th day onwards in addition to antioestrogens the animals also received sub anticonvulsant dose of phenytoin (13.5 mg/kg). All the drugs were administered i.p. All the treated and control animals were subjected to MES daily for 11 days to assess the effect of treatments on MES. The efficacy of the oestrogen antagonists was confirmed by vaginal cytology.
Clomifen (2.7 mg/kg), Tamoxifen (9.9 mg/kg) alone did not protect the animals against HLE (hind limb extension) in MES test.

However both oestrogen antagonists potentiated anticonvulsant activity of phenytoin.

F : IIB : 47 ANTI-INFLAMMATORY ACTIVITY OF dl-alpha TOCOPHERYL ACETATE (VITAMIN E) IN ALBINO RATS.

P.A. PATIL AND T.N. BHOSALE

Tocopherols, known biological antioxidants reported to possess free radical scavenging property and suppress prostaglandin biosynthesis. Other antioxidants like ascorbic acid have been reported to possess anti-inflammatory activity. There is paucity of information regarding anti-inflammatory activity of dl-alpha tocopheryl acetate (Vit. E). Hence in the present study clinically equivalent doses of Vit. E (9, 18, 36 & 72 mg/kg) alone and in combination with aspirin (54 mg/kg) have been investigated for anti-inflammatory activity in both acute (Carrageenan induced paw oedema) and sub acute (foreign body induced granuloma) models of inflammation. The effect of Vit. E per se and in combination with aspirin on gastric mucosa was also studied. Vitamin E in doses of 18, 36, and 72 mg/kg suppressed inflammation significantly (P<0.05 to P<0.001) in both models of inflammation and also potentiated anti-inflammatory activity of aspirin without significantly increasing its ulcerogenecity.

F : IIB : 48 ANTI-INFLAMMATORY ACTIVITY OF SOME DOPAMINE ANTAGONISTS IN ALBINO RATS.

S.S. MUPPAYYANAVARMATH, RAVI KUMAR, P.A. PATIL & V.V. GOURIPUR

Some phenothiazines (8-trifluoromethyl derivatives and chlorpromazine) have been reported to possess antiinflammatory activity. However there are no such reports regarding anti-inflammatory activity of other dopamine antagonists. Hence in the present study four dopamine antagonists belonging to different chemical groups viz. Chlorpromazine (CPZ), Thioridazine (TRZ), Haloperidol (HPD), Domperidon (DMP) in clinical equivalent doses were investigated for their anti-inflammatory activity against carrageenan induced paw oedema in albino rats and their effect in combination with sub-anti-inflammatory dose of aspirin was also studied. In clinically equivalent doses CPZ (5 mg/kg), TRZ (50 mg/kg), HPD (4 mg/kg) and DMP (50 mg/kg) showed significant anti-inflammatory activity (P<0.001). Lower doses of CPZ (2 mg/kg), TDZ (25 mg/kg), HPD (2 mg/kg) and DMP (25 mg/kg), which were devoid of anti-inflammatory activity significantly potentiated the anti-inflammatory activity of aspirin.

F : IIB : 49 OPIOID ANALGESICS POTENTIATE THE ANTI-INFLAMMATORY ACTIVITY OF ASPIRIN IN ALBINO RATS.

S.V. HIREMATH, NAZEER AHMED, P.A. PATIL & V.V. GOURIPUR

Commonly used opioids like morphine, pethidine and pentazocine in therapeutic equivalent doses and in lower doses have been investigated in the present study for their anti-inflammatory activity and their effect on gastric mucosa.

Therapeutic equivalent doses of Morphine (4.5 mg/kg), Pethidine (45 mg/kg) and Pentazocine (13.5 mg/kg) produced significant anti-inflammatory activity in both the acute and sub-acute models of inflammation (viz. Carrageenan induced paw oedema and cotton pellet induced granuloma) and was comparable to that of Aspirin 200 mg/kg. While lower doses Morphine (1.5 mg/kg), Pethidine (15 mg/kg) and Pentazocine (4.5 mg/kg) failed to produce such effect.
Lower doses of these opioids in combination with sub-anti-inflammatory dose of aspirin (54 mg/kg b.w.) produced significant anti-inflammatory activity in both models of inflammation but without producing any significant gastric ulceration. Present findings indicate that these opioid analgesics potentiate anti-inflammatory activity of aspirin without significant G.I. ulcerogenicity.

F : IIB : 50 VARIABLE FOOD AND FLUID INTAKERS RESPONSES IN MICE TO AN ADDITIONAL DIET DRINK.

D.V. MURALIDHARA,
DEPARTMENT OF PHYSIOLOGY, KASTURBA MEDICAL COLLEGE, MANGALORE AND M. DESAUTELS,
DEPARTMENT OF PHYSIOLOGY, COLLEGE OF MEDICINE, UNIVERSITY OF SASKATCHEWAN,
SASKATOON, CANADA.

Food and fluid intake responses in mice to inclusion of an extra diet or fluid in addition to regular chow and tap water were investigated in two separate experiments. Mice given laboratory chow diet and a high fat diet (HF) together for 6 weeks had differences in body weight gain and carcass fat. 23% of the mice gained less body weight (HFL) 38.0±1.0g and that was comparable to the body weights of mice maintained on chow only which served as controls. The remaining HF mice gained significantly higher body weights (HFH) of 46.0±2.0g. The total food intake of HFL and HFH mice were not significantly different from each other, but was higher than the chow fed controls. Carcass fat was 10.0±1.0g in the HFH mice that was significantly higher than the HFL or chow fed controls. Another set of mice maintained on a free choice selection for water or 10% ethanol solution for 3 weeks resulted in mice of 3 groups that drank 25-30% or 12-15% or less than 5% ethanol solution as a total of their fluid intakes. The body weight and total fluid consumption was similar in all the 3 groups. The total food consumption was significantly less only in mice that ingested large volumes of ethanol as compared to the others. This group of mice also revealed 14% carcass fat that was higher than 9% fat in the other two groups. The results suggest that a very precise mechanism operating in regulating food and fluid intake in these animals while the extra fat gain may be resulting from a difference in fat oxidation in addition to other factors such as metabolic, hormonal and behavioural which need further investigations.

F : IIB : 51 SERUM, GABA, ASPERATE AND GLUTAMATE IN STREPTOZOTOCIN INDUCED DIABETES' PERIPHERAL NEUROPATHY IN ALBINO RATS.

BALKI BANDYOPADHYAY, SANGITA SEN, ANIL KUMAR GANGULY
DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICINE, 244B, A.J.C. BOSE ROAD, CALCUTTA-20, CALCUTTA UNIVERSITY.

Diabetes mellitus involves nervous system in various ways. That the sensory, motor and autonomic nerves are all affected by diabetes mellitus is well known. One of the most common manifestation that occurs under this situation is peripheral neuropathy. The factors concerned with genesis of peripheral neuropathy are very many.

It appears from the existing literature that the activity of Schwann cell are interfered with, resulting in demyelination of peripheral nerves which form the basis for explaining peripheral neuropathy. In the present experiment, diabetes has been produced by streptozotocin administration, with a view to demonstrate peripheral neuropathy in spinal reflexes in the form of tail-flicking response has been determined.

GABA, Glutamate and Aspartate levels have been estimated in serum and compared with the controls in order to assess whether they have any correlation with streptozotocin induced diabetes mellitus and development of peripheral neuropathy.

F : IIB : 52 IMMUNOMODULATOR ACTIVITY OF A HERBAL DRUG-PRO-IMMU IN CONJUNCTIVITIS AND CORNEAL ULCER.

N.R. BISWAS, NIRANJAN KUMAR, P. MONGRE, R.M. PANDEY, N. GOPAL

Pro-immu is a polyherbal formulation of Indian herbs, Saharanpur (India), which contains extracts of immunoactive plants. It is an immunomodulator which strengthens the immune status of the immuno-compromised
patients by significantly increasing their lymphocyte counts. The present study was carried out to compare the
efficacy of oral pro-immu capsule with placebo along with ciprofloxacin eye drop in the treatment of conjunctivitis
and corneal ulcer. One hundred patients were included in this double masked, randomised parallel design
placebo controlled comparative clinical trial. The patients were randomly divided into two groups; one group
was given ciprofloxacin eye drop (0.3%) with 1 drop 4 times daily with placebo capsule and the other group with
ciprofloxacin eye drop and pro-immu capsule orally (one capsule twice daily x 7 days). Assessments were done
with subjectively and objectively to see if the combined treatment offered any advantages statistically over
monotherapy with ciprofloxacin alone.

Healing of corneal ulcer is faster with combined therapy (P<0.001) than ciprofloxacin alone alongwith
quicker recovery of congestion (P<0.05).

Similarly in conjunctivitis cases relieves of itching, foreign body sensation and irritation were quicker when
pro-immu was added along with ciprofloxacin (P<0.001, P<0.05, P<0.01 respectively). It may be concluded that
treatment with pro-immu + ciprofloxacin combination is more effective than treatment with ciprofloxacin alone.
Probably this is due to synergistic actions of these two different kinds of drugs.

F : IIIB : 53 EFFECT OF ADMINISTRATION OF EITHER ANTI-SCORPION VENOM SERUM OR INSULIN
IN ALLOXAN TREATED SCORPION ENVENOMATED RABBITS ON TISSUE GLYCOGEN
CONTENTS.

K. RADHA KRISHNA MURTHY, A.S. DUBEY AND LIDA HAGHNZARI
DEPARTMENT OF PHYSIOLOGY, SETH G.S. MEDICAL COLLEGE, PAREL, MUMBAI.

Indian red scorpions (Buthidae family) stings are responsible for a number of deaths all over the world
including India. The effect of species specific anti-scorpion venom serum and the intervention with the
administration of insulin therapy in the alloxan treated experimental rabbits was investigated in the present
study. Rabbits of either sex weighing 1.5-2 kg were given alloxan i.v. (125 mg/kg). The scorpion venom was
obtained from Haffkine Institute and the anti-scorpion venom serum was obtained from Haffkine Biopharmaceutical
Corporation Ltd., Mumbai. Experimental rabbits were divided into five groups : Group-1 normal, Group-2 alloxan
treated, Group-3 alloxan + scorpion envenoming, Group-4 alloxan + scorpion envenoming + anti-scorpion
venom serum, Group-5 alloxan + scorpion envenoming + insulin. Glycogen content of liver, atrium, ventricle,
rectus abdominus and gastrocnemius was estimated. Alloxan treatment alone and additionally scorpion
(Mesobuthus tamulus concanesis, Pocock) (3.5 mg/kg venom) envenoming resulted in significant reduction in
the glycogen content of all tissues. 4 units of crystalline insulin given i.v. was found to be more effective in
increasing the tissue glycogen content as compared to anti-scorpion venom. We have demonstrated earlier that
anti-scorpion venom is essentially acting through release of insulin. The present experiments further demonstrated
that insulin may be more effective in reversing the metabolic disturbances brought about by scorpion envenoming
compared to the effect of anti-scorpion venom administration alone.

F : IIIB : 54 VERAPAMIL-A CALCIUM CHANNEL BLOCKER INDUCED POTENTIATION OF
DICLOFENAC, PENTAZOCIN & KETOROLAC ANALGESIA IN ALBINO RATS

MINI JOSEPH, S.K. TONGIA, PRADEEP PHADNIS, A.W. BHAGWAT
DEPARTMENT OF PHARMACOLOGY, M.G.M. MEDICAL COLLEGE, INDORE

Verapamil is an established slow calcium channel blocker. It impedes calcium influx in a variety of
excitable tissues following excitation. Calcium plays role in excitation response coupling process and eventually
in the conduction of algogenic impulses. Diclofenac and ketorolac produce somatic analgesia through Prostaglandin
Synthesis inhibition mechanism and Pentazocin, exerts analgesic effect through opioid peptidomimetic (opiopeptin)
mechanism. Subanalgesic or minimum analgesic doses of Diclofenac 0.5, 1, 2 mg/kg of BW, Pentazocin 0.25,
0.5, 1 mg/kg, of BW and ketorolac 0.01 mg/kg of BW in young male albino rats (weighing 70-90 gm) caused
upto 1/3 increase in the threshold time of tail withdrawal in response to thermal pain elicited by tail point heating
via electrically heated wire of analgesiometer.

Prior treatment with Verapamil 4 mg/kg IP raised further tail withdrawal time in response to thermal
algogenic stimuli, to values more than double of that as obtained in absence of Verapamil following Diclofenac,
Pentazocin and Ketorolac IP administration.
It is inferred that Verapamil—a calcium channel blocker potentiates the test analgesic drugs by impeding calcium mobility in neuronal pathways.

**F : IIIB : 55**

**TESTICULAR FUNCTIONS IN RATS FOLLOWING ADMINISTRATION OF EXTRACT OF OCIMUM SANCTUM (TULSI) ACUTE EFFECT**

S. SOOD, R. REGHUNANDANAN, V. REGHUNANDANAN, G.P. SINGH,

Four months old 20 male rats were adminstered Benzene extract (300 mg/kg body weight in 1 ml of propylene glycol) of Ocimum sanctum. Another group of 20 age matched rats were administered only the vehicle. Both the groups were sacrificed by decapitation after 48 hours of injection and testicular functions, like sperm count, Gutamyl transpeptidase estimation (GTP), a marker of Sertoli cell activity and Lactate dehydrogenase (LFH) estimation, a marker of germ cell activity were studied. GTP level and Testicular sperm count were decreased significantly in test group (P<.001) as compared to control group. But there was no significant difference in LDH level in both the group. These results suggest that Tulsi extract reduces spermatogenesis by interfering with sertoli cells function without affecting germ cells activity.

**F : IVB : 57**

**VISUAL AND AUDITORY REACTION TIMES AT A MODERATE ALTITUDE**

P. K. NANDA,
DEPARTMENT OF PHYSIOLOGY, I.G. MEDICAL COLLEGE, SHIMLA - 171001.

Visual reaction time (VRT) and auditory reaction time (ART) were measured using the standard kymographic procedure in a homogenous group of 77 subjects (45 males and 32 females) in the age group of 18-23 years residing, at least for 3 years prior to the conduct of the study, at a moderate altitude of 2150 m above mean sea level.

The mean value for VRT, which was found to be 209.5 msec in males and 213.2 msec in females, can be considered higher in the present study as compared to the same reported by other workers for Indian subjects. The mean value for ART, which was 173.3 msec in males and 180.2 msec in females, on the other hand, is comparable with the values of ART reported by other workers.

Although little work appears to have been conducted on VRT and ART perse in subjects residing at elevated altitudes and hence exposed to environmental hypoxia, there are indirect reports to suggest that the increased VRT could be due to the effect of altitude hypoxia on visual sensitivity. In contrast, the unchanged ART could be corroborated with the reported comparative resistance of the auditory sensitivity to altitude hypoxia.
EFFECT OF CHRONIC NOISE STRESS ON ACETYLCHOLINESTERASE ACTIVITY IN RAT BRAIN

SEMBULINGAM, K., PREMA SEMBULINGAM AND NAMASIVAYAM, A.

The role of central cholinergic system was elucidated in rats subjected to chronic exposure to noise stress by determining the Acetylcholinesterase activity. Male albino rats (n=6) were exposed to 4 h continuous noise (100 dB, 10 KHz) stress for 30 days. Equal number of controls were included. The animals were sacrificed on 31st day and the activity of the enzyme Acetylcholinesterase was determined in cerebral cortex, hippocampus, hypothalamus and corpus striatum of brain.

In the animals exposed to chronic noise stress, the enzyme activity was significantly elevated in corpus striatum and hypothalamus. However, the activity of the enzyme was unaltered in the other two brain regions, cerebral cortex and hippocampus. Our earlier study revealed a significant increase in the activity of Acetylcholinesterase in all these four brain regions of rats subjected to acute (30 minutes) noise (100 dB) stress. The unaltered enzyme activity in cerebral cortex and hippocampus observed in the present study indicated the tolerance to chronic exposure to noise. The elevated activity of the enzyme in hypothalamus and corpus striatum after prolonged exposure to noise appeared to be compensatory to an increased cholinergic activity in stress conditions.

TOPOGRAPHIC DISTRIBUTION OF P-VEP IN NORMAL SUBJECTS

R. KANAKA, V.T. SHAKUNTHALA, RAJEEV SHARMA, K.S. NIRMALA & R. SRINIVASA,
DEPARTMENT OF PHYSIOLOGY AND DEPARTMENT OF NEUROLOGY*, M.S. RAMAIAH MEDICAL COLLEGE AND TEACHING HOSPITAL, BANGALORE-560 054.

Multichannel visual evoked potentials were recorded from 20 healthy volunteers of both sexes in the age group of 20-40 years. Recordings were done from five horizontally placed electrodes in the occipital area (EX1, O1,O2, O2, EX2) with a common reference in the frontal area (FZ). Monocular testing was done using full field stimulation of black and white checker board reversal of 8 size. Responses were averaged for 200 preset stimulations.

Absolute latency, interfield variations and interocular differences in latency and amplitude of the various wave forms (NPN complexes) were noted.

Regardless of the eye being stimulated, the latency of N 75, P 100 and N 145 wave forms appeared to be more on the right side as compared to the left side. The amplitude of the wave forms obtained from obtained from various electrode positions was found to be different. The exact generator sources and sequence of activation are discussed.

EFFECTS OF MENTAL STRESS IN TRIBALS AND NON-TRIBALS.

KRISHNA CHOUDHURY SINHA.
ASST. PROF. PHYSIOLOGY, NALANDA MEDICAL COLLEGE, PATNA.

INTRODUCTION:

Mental stress though a nonspecific entity, is increasing every day in our life. It has been accepted as a by product of modern civilisation. Stress stimulates hypothalamus to release C.R.H. which acts on Anterior Pitutory and increases the secretion of A.C.T.H. thereby cortisol. This high cortisol level starts chain of metabolic reaction in the body. Blood sugar and serum cholesterol level gradually increases.

MATERIAL & METHOD:

The apprehension of inevitable operations for a patient is a sufficient cause to create mental stress.

The present study is aimed at, to find out the effect of mental stress (Apprehension of Operation) on the carbohydrate and lipid metabolism i.e. on blood sugar and blood cholesterol levels of the subjects (patient).
Further it was probed as to whether the response of an individual to the stress is different in different ethnic groups like Tribals and Non-tribals or they are same.

The study was conducted at Ranchi on the patients admitted in the Surgical and Gynaecological wards of the hospital. Blood was collected at two phases. In first phase it was collected before the finalisation of operation and in the 2nd phase it was collected just before the operation. The values were labelled as 'pre stress' value and 'stress' value.

The subjects were divided into different age groups.

The variations of blood sugar and cholesterol level of different age groups were compared with each other.

**OBSERVATION:**

The observation is based on the findings on 45 admitted patients in surgical and gynaecological wards. We had 22 non tribals and 23 tribals.

The pre and stress levels in all the age groups differed in statistically significant way except the age group E which has only two subjects.

The age group of 41 to 50 years, which differed significantly from other groups was further subdivided into tribals and non-tribals, to find out whether different "modes of life" modifies the response to stress. It was found that the difference in this two distinctly separate ethnic groups is statistically significant. The tribal population had less fluctuations in their Blood Sugar and Blood cholesterol levels.

**CONCLUSION:**

The observation of the present study brings forward certain very pertinent and clinically significant points into light:

(a) The apprehension of operation is a sufficient reason to produce mental stress.

(b) Tribal population being more nearer to nature and playful in their life style is affected less by the mental stress.

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**F : IVB : 61 CHANGES IN LEARNING AND MEMORY AFTER CHRONIC PHENOBARBITAL ADMINISTRATION**

**SUDHA. S. & PRADHAN, N.**

The learning and memory in adult male, Wistar rats were assessed using the T-maze and passive avoidance tests after chronic administration of phenobarbital (PB) at 5, 15, 30, 60 or 75 mg/kg intraperitoneally for 21 days. The PB levels in plasma, acetylcholine esterase (AChE) activity in the motor cortex, pyriform cortex, olfactory bulb, striatum, septum, and hippocampus and the levels of serotonin (5-H), 5-hydroxyindole acetic acid (5-HIAA), dopamine (DA), dihydroxyphenyl acetic acid (DOPAC), and homovanillic acid (HVA) levels in the hippocampus were measured. There was no significant change in learning and memory, AChE activity or monoamine levels at PB levels of 1.5, 6.0, 9.0, and 25 ug/ml (corresponding to doses of 5, 15, 30 or 60 mg/kg PB respectively). However, at a plasma level of 55 ug/ml (75 mg/kg), PB caused impairment in learning and memory. It was associated with an increase in AChE activity and 5-HT levels in the hippocampus. The results indicate that chronic PB administration may not be linked to impaired learning and memory functions at doses used in anticonvulsant therapy.

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**F : IVB : 62 BILATERAL LESIONS OF BASOLATERAL AMYGDALA ATTENUATES HYPERPHAGIA IN THE VMH SYNDROME.**

**GANARAJ B AND JEGANATHAN P.S.,**

**DEPARTMENT OF PHYSIOLOGY, KASTURBA MEDICAL COLLEGE, MANGALORE.**

The typical hyperphagic symptoms were observed following bilateral lesions of Ventromedial Hypothalamus (VMH). This was widely believed to be the result of the removal of the inhibitory influence of the VMH on the Lateral hypothalamic (LH) feeding centre. The present study was undertaken to elucidate the functional interaction of VMH with Basolateral nucleus of amygdala (BLA). Adult male wistar albino rats were used as experimental
animal model and bilateral sequential stereotaxic lesions of BLA and VMH were performed. Daily intake of food and water were measured before and after the lesion.

The rats were divided into three groups and the Group I (VMH-BLA) was lesioned first in VMH. Three weeks later, they were again subjected to lesion of BLA. In the Group II animals, the VMH was lesioned following BLA lesion (BLA-VMH). And the third group served as the Sham Lesioned control.

Lesion of BLA in the VMH lesioned hyperphagic rats (VMH-BLA) decreased their food and water intake. On the other hand, food and water intake in moderately hyperphagic BLA lesioned rats increased further following the lesion of the VMH (BLA-VMH). However, the intake in both combinations of lesions were significantly lesser than that seen in the VMH (alone) lesioned rats; but significantly more than that seen in the SL Controls or the Prelesion intake of the same rats.

These results thus suggest that the intact BLA was essential for the development of the full fledged hyperphagia in the VMH lesioned rats.

F : IVB : 63  HISTOLOGICAL AND STRUCTURAL CHANGES OF SKELETAL MUSCLE AND NERVE IN DENERVATION, DISEASE AND ATROPHY

B.P. DAS, V. DAWKA,
ASSISTANT PROFESSOR OF PHYSIOLOGY, GAUHATI MEDICAL COLLEGE, PROFESSOR OF PHYSIOLOGY, GAUHATI MEDICAL COLLEGE.

In order to understand the abnormality of the muscle and nerve and their structural changes in disease and functional disability a study of their histological appearances was undertaken. Gross changes of weight, lack of colour and lustre were observed. The microscopical changes in the form of loss of transverse striations, disorganization of band structure of A.I. and Z bands, and loss of myofibrils were observed. The intramuscular spaces opened up and the sarcolemmal nuclei were visibly arranged in rows along the surface of the fibre signifying degeneration. No motor end plates were seen. The nerves became bulbous and lost their contour and continuity. The findings were compared with the normal.

Histologically the structural changes in muscle and nerve in experimental denervation and disease were in conformity with the expected EMG changes. However disuse atrophy and changes in old age differed. Gross reduction of muscle fibre occurred but no loss or disruption of muscle architecture was seen. This significantly suggests that intact anterior horn cells have a trophic nutritional effect on the muscle fibre which needs to be further ascertained.

F : IC : 64  FITNESS CLINICS : A TEACHING METHOD

SHRINIWAS J. KASHALIKAR, J.V. GADKARI,
DEPARTMENT OF PHYSIOLOGY, ASSOCIATE PROFESSORS, G.S. MEDICAL COLLEGE, MUMBAI-400012.

This paper discusses:
1. The policy of financing the production, service, education and research activities in private and public sectors
2. The present state of departments of Physiology with respect to activities in these areas
3. Optimal utilization of material and human resources in the Physiology departments in production, service, education and research
4. Integration of activities in the fields of production, service, education and research
5. Importance of such an integration in terms of contribution to social welfare, job satisfaction and motivation.
6. Concept of fitness clinics or health check up O.P.Ds. as a teaching method in achieving these goals.
7. Administrative considerations with respect to designing policy of fitness clinics
8. Implementation of fitness clinics
9. Scope and limitations of fitness clinics or health check up O.P.Ds.
Today's generation of students is having growing up with exposure to sophisticated and advanced electronic communication media at home and in schools. For communicating with such a generation it is imperative on part of the teachers to get accustomed to computers. Physiology is a dynamic subject and the classical methods of teaching cannot demonstrate molecular movements by conventional teaching methods. Computers provide us with enhanced ability to communicate with students. So far, grey areas of understanding of Physiological concepts were limited by the students' power of imagination. An accurate knowledge of Physiology is essential for understanding of correct correlation to clinical conditions. With this in mind a study is undertaken to develop a software for computer aided teaching to the students at 1 MBBS level. The software is being designed in such a fashion that it can be used for self learning and self assessment by students. In the self-learning package the students will be able to acquire comprehensive knowledge about the body system. They can attempt some questions suggested in self learning package of their own. In self-assessment package they can repeatedly attempt multiple choice questions and see their progress. Software will be tested for its acceptability by students. Software demonstration is arranged for.

Physiology is a "theoretical" subject taught primarily by didactic lectures for a period of a year and a half. Attending lectures is the main/exclusive learning experience in the theory of the discipline for the students in the 1st year MBBS. For this reason we found it important to know about the students' perception regarding the existing teaching programme so as to probe the scope of improving the effectiveness of the programme. A questionnaire was prepared towards this end which also invited the students' suggestions for supplementary programmes and aids to enhance the learning-teaching experience. The response from the students at different stages in their undergraduate training confirm some of the known limitations of the lecture as a teaching-learning tool, including its oppressive element (when attendance is compulsory) to those few whose learning style is highly individualistic, based on self-teaching. Additionally it brings forth contradictions in a section of the students such as a desire to reduce the number or total time for lectures on the one hand and reluctance for self-teaching on the other. These contradictions and some of the suggestions for less regimentation and more flexibility in the formal programme, need-based tutorials and the desirability of vertical integration of the subject for better learning of Physiology are discussed.

Adequate changes in medical curricula to suit the modern needs has been stressed and modifications have been suggested in the tools and trends in educational technology. Medical Council of India accordingly has suggested modifications in the present system of teaching, with particular emphasis on medical therapeutics. In accordance with MCI suggestions in our Institute we have introduced prescription analysis exercises to undergraduate medical students. MBBS Phase-II students were asked to maintain a clinical diary to write diagnosis, prescriptions and relevant investigations of patients seen in OPD and in wards. They were asked to follow up the cases to note prognosis and adverse drug reactions if any. The students were divided into groups of 20-30 were asked to analyse and comment on the prescription they had written. During the group discussion various aspects like preferred drug, alternate drug with dosage schedule, drug combinations, rationality of irrationality of prescriptions, pharmacological basis for their use, cost benefit considerations, adverse drug reactions were considered without going into theoretical details.
The feed-back received from the participant students indicated that this method of teaching was interesting and effective. We feel that this novel method of teaching will promote the rational drug use in their clinical career.

**PRACTICAL COURSES IN PHYSIOLOGY**

**SHRINIWAS J. KASHALIKAR, JAYASHREE V. GADKARI, ASSOCIATE PROFESSORS**
**DEPARTMENT OF PHYSIOLOGY, G.S. MEDICAL COLLEGE, MUMBAI-400012.**

This paper discusses:

1) The concept of practical course  
2) Criteria of evaluation.

1) We grasp theoretically factual information or complex conceptual framework involving cause and effect or other relationship/s.
   
   Crystallization of this knowledge is achieved if the facts or concepts are demonstrated. Perceptible reproduction of predicted observation and its record or sometimes unexpected observations and their explanation is meant for tallying the concepts studied theoretically.

   This makes the subject appealing and generates motivation, curiosity and creativity.

2) Questions for evaluation: Do the students see or experience or learn:
   
a) i) factual detail (RBC)
   
   ii) cause and effect relationship in human? (effect of pause on onset of fatigue)
   
   iii) New dimension not described (exposure to population) (COGNITIVE DOMAIN)
   
   b) Procedure (PSYCHOMOTOR SKILL) with may help them to study the human being? (measurement of blood pressure)
   
   c) Benefit in terms of their attitude? (proper history taking and clinical examination with appropriate bedside manners) (AFFECTIVE DOMAIN).
   
   d) Contemporary research procedure?
   
   e) motivated and curious?
   
   f) Application of cognitive, psychomotor and affective benefits

   i) Leading healthy life  
   
   ii) Health promotion  
   
   iii) Healing

   iv) Health education

   v) Research

   vi) Policy making

   g) Wrong ideas from the practicals? (e.g. stannius ligature allows the frog heart to beat but in human beings it is not compatible with life)

   h) Outdated techniques of research or investigation as teaching tools which cannot be used in either clinical or research field?

**SELF-ASSESSMENT BY SELF-CODE**

**BILQUIS M.A. RASHEED & SIKANDER HUSSAIN,**
**DEPARTMENT OF PHYSIOLOGY, DCMS, PO. KANCHAN BAGH, HYDERABAD-500258 (AP).**

Medicos of D.C.M.S. have been declared pass as per EMCET-94/95 conducted by A.P. State Government. However they could not get admission in nine Medical Colleges of A.P. because of their merit rank and other reservation rules, they were admitted in DCMS. We planned self assessment by self-code as a novel approach to bring up their dormant talent to achieve academic excellence, to develop leadership qualities to face the challenge in the competitive world, and also to give meritorious students incentive awards to encourage other students in general. Before implementing the novel technic Medicos have been instructed to disguise their identity, and write their own selected codes instead of Role No./Name on the answer scripts. Theory examinations have been conducted successfully in three different system announcing only month without date and time. After each exam. the list of marks was displayed on notice board with their own selected codes. Thus three chance
were given to Medicos as blessing in disguise for self assessment. Analysis of results shows vividly a wise in percentage of pass and also a rise in toppers numbers. It is worth mentioning here that we could cultivate competitive spirit among boys and girls by giving incentive gifts.

**F : IC : 70 SELF LEARNING AND INTERACTION WITH TEACHER (VIEWS OF STUDENTS OF A PRIVATE MEDICAL COLLEGE)**


General impression is that;

i) Students of Private Medical College (PMC) being from affluent section, and are easy-going, casual in study and student teacher interaction.

ii) Females are more serious, studious and show concerned attitude towards teacher. Present mode of admissions to PMC is from different strata of society, payment and non-payment, prompted the study to see differences if any towards Self Learning (SL) and Interaction With Teachers (IWT) between students of two different streams and sexes. A simple questionnaire containing questions, some pertaining to SL and some to IWT was administered to 155 (85-payment, 70-non-payment, and 96M 59F) Phase II MBBS students of BLDEA's Shri B.M. Patil Medical College, Bijapur. Positive/negative points were assigned to each response and pooled responses were utilized for comparison applying $\chi^2$ statistics.

Overall 69.09% and 68.9% of students had positive attitude towards SL & IWT respectively.

<table>
<thead>
<tr>
<th>Category (-%)</th>
<th>Payment</th>
<th>Non-payment</th>
<th>Male</th>
<th>Female</th>
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<tr>
<td>S.L.</td>
<td>65.64</td>
<td>73.28</td>
<td>68.85</td>
<td>69.57</td>
</tr>
<tr>
<td>I.W.T.</td>
<td>64.23</td>
<td>78.85</td>
<td>67.5</td>
<td>69.05</td>
</tr>
</tbody>
</table>

Though there is difference between payment, non-payment categories towards SL & IWT, the difference is not statistically significant (p>0.05) males and females behaved alike in their attitudes towards SL & IWT.

These findings practically explode the myth that affluence and sex influence learning attitude and behaviour.

**F : IC : 71 THERAPEUTIC SELF MEDICATION BY DOCTORS**

**WALI R.S, KANKANWADI S.K., KADLIMATTI S.H., KULKARNI D.R., DEPARTMENT OF PHARMACOLOGY, B.L.D.E.A'S SHRI B.M. PATIL MEDICAL COLLEGE, SHOLAPUR ROAD, BIJAPUR-586103, KARNATAKA STATE.**

Therapeutic Self Medication is common amongst doctors. Present study probes the extent, pattern, basis of drug choice and difference if any between practitioners of various systems, specialists and GP's and teaching faculty and others.

A simple Questionaire was distributed among 460 doctors around Bijapur. Analysis is based on 326 responders.

Statistics - $X^2$ test.

**Features of Questionaire :**

i) Disease suffered 6mo. priorly.

ii) Drugs consumed : dose, frequency, route, duration, adverse effects, sample/purchased.

iii) Category : allopathic, non-allopathic, GP, specialists, teaching.

1) A high Percentage (70%-326/460) response indicates interest and positive co-operation for such study.

2) Response rates in allopathics (63.3%) is significantly more than non-allopathics (58.3%) (p<0.025) suggesting scientific curiosity more in allopathics.

3) System of practice does not influence attitude to drug use, both allopathic and non-allopathics had similar (74.5%-65.7%) medication rate.
A disconcerting finding was, allopathic specialists behaved (84%) like GP's (83.4%) in self medication.

Not surprising 78.3% of non-allopathics took allopathic drugs despite proclaimed superiority and safety of their medicines.

Faculty position had sobering effect on urge for medication. (faculty 69.2%, non-faculty 83.4%, p<0.001); yet, high percentage of medical teachers indulge in self medication contrary to what they teach.

PRIVATE COACHING IS DESIRABLE: SAY MOST STUDENTS, ESPECIALLY PAYMENT CATEGORY

Private coaching were unheard of, in Medical Colleges in the past. In recent years there appears to be a rising trend in students resorting to private coaching, particularly in private Medical Colleges, as these students come from affluent strata of society.

In our College students of Phase II MBBS, belonging to payment and non payment categories, an attempt was made to find out differences between these two categories and sex. Questions aimed at knowing the desire to recourse to private coaching and reasons there for, were administered to 155 students (M57,F28=58 payment, M39,F31=70 non payment). Positive/negative points were assigned to responses. Pooled points were utilized for comparison, applying X² statistics.

Overall outcome (44.5%) corroborates the impression that a sizeable proportion of students resort to private coaching. As anticipated payment category has significantly (P<0.025) higher proportion (54 % Vs 32%). There is no difference between males and females. Inability to follow the subject, poor coverage of subject were common reasons given by all; payment category however felt that non dictation of notes in regular classes was main reason (P<0.05) tempting them to private coaching.

HYPOGLYCEMIC AND HYPOLIPEDEMIC EFFECTS OF RAW GARLIC ON DIABETIC PATIENTS
MEENA VARMA, DEPARTMENT OF BIOCHEMISTRY, M.G.M. MEDICAL COLLEGE & M.Y. HOSPITAL, INDORE-452001, M.P.

The present study was undertaken on 133 known diabetic patients, to investigate, whether the raw garlic buds could be used to produce hypoglycemic and hypolipidemic effects in diabetic patients.

Two crushed garlic buds were given to every patient with one glass of water daily for one year, along with balanced diet. Blood investigations were done on every 15th day of garlic ingestion.

A slight decrease in levels of Blood sugar, serum triglycerides, serum cholesterol and total lipids were observed after the 60 days of garlic ingestion, but then after there was a significant reduction in these biochemical parameters, indicating the favourable effect of raw garlic on diabetic patients.

The study was carried out in clinical Biochemistry laboratory, M.Y. Hospital, Indore.

ROLE OF SUBSTANCE P IN COMBATING STRESS INDUCED BEHAVIOURAL ALTERATIONS AND CATECHOLAMINE STATUS IN RATS.
ANJANA G VIJ AND N.K. SATIJA, DEFENCE INSTITUTE OF PHYSIOLOGY AND ALLIED SCIENCES, LUCKNOW ROAD, TIMARPUR, DELHI-110 054.

The effect of peripheral administration of neuropeptide substance P (SP) on behavioural and neurochemical response to acute stress was investigated in this study. Adult male albino rats pre-trained on Morris Water Maze (MWM) were exposed to multiple stress involving immobilization, shock (3 sessions of 5 min each, 10 Hz, 1s, 60 V), vibration (40 cps on an angular platform at an angle of 15), light flashes (6 sessions of 5 bursts of 10,000
lux) and noise (95-103 dBA) for 30 min. daily for three days following single intra-peritoneal injection of saline or SP (125 or 250 ug/kg/bw). Behavioural measures were carried daily prior and after the stress exposure. All the rats were sacrificed on fourth day immediately after 30 min stress exposure along with the saline injected non-stressed rats and brain and adrenal catecholamine assayed.

The findings show that animals exposed to stress were hypokinetic and took more time to locate the platform whereas the animals receiving SP, displayed neither the stress induced hypokinesia nor behavioural deficits in acquisition scores on MWM performance. Pre-treatment with SP abolished norepinephrine depletion in stress exposed rats and increased cerebral as well as adrenal dopamine levels. The results suggest that stress reducing effect of SP may be mediated by activation of catecholaminergic synthesis.

F : IIC : 75 INTERACTION OF ACE INHIBITOR AND SULFONYLUREA ON SERUM LIPID PROFILE IN DIABETIC RATS

PATTNAIK, KALIPRASAD, DAS M, AHMED Q, MOHANTY J
DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK.

Diabetes is frequently associated with hypertension. Hence oral hypoglycemic Agents are often used concomittantly with antihypertensive agents. As Diuretics, Beta blockers and Nifedipine are having adverse effects over serum glucose and lipid metabolism, we studied the interaction of Sulfonyl urea (Tolbutamide) with ACE inhibitor (captopril) in Diabetes with reference to serum lipid profile, as disorders of lipid metabolism, co-exist both with Diabetes and hypertension.

For this study fifty Albino rats (100-200 gms) were taken and divided into "5" equal groups.
Group-I injected with normal saline
Group-II given Alloxan 200 mg/Kg, S.C. single dose.
Group III given Alloxan + Tolbutamide (6.25 mg/kg) orally daily.
Group IV given Alloxan + Captopril (0.25 mg/100 gm) orally daily.
Group V given Alloxan + (Captopril + Tolbutamide).

Blood samples were collected before and after 72 hrs., 1 week, 2 weeks and 4 weeks intervals of Drug administration. Serum lipid concentration were estimated by Enzymatic kit methods and the results were statistically analysed.

This study showed that use of Captopril alone or in combination with Sulfonylureas has no significant effect on Serum Lipid profile in diabetic rats.

F : IIC : 76 INTERACTION OF SULFONYLUREA AND ACEI ON BLOOD GLUCOSE CONCENTRATION OF DIABETIC RATS

DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK.

With advent of antihypertensive drugs, ACEIs are extensively used in the treatment of hypertension. But reports regarding their adverse effect on metabolism are meagre. When hyperglycemia and hypertension coexist in a patient, interaction of ACEIs and antidiabetic drugs on BGC needs consideration. Keeping this in view the present work was undertaken.

In this study 50 albino rats (both sexes) weighing between 150-200 gms were selected and divided into 5 groups. Rats of group 1 and 2 were injected with normal saline and alloxan 200 mg/kg s.c. (as single injection) respectively. Rats of group 3 to 5 were injected with alloxan followed by tolbutamide 6.25 mg/kg, Captopril 0.25 mg/100 gm and Captopril, Tolbutamide combination orally daily for 4 weeks respectively.

Blood samples were collected before and after different time intervals of test drug administration. B.G.C. was estimated by : Glucose oxidase peroxidase method in spectrophotometer. Statistical analysis of result was done by students' ‘t’ test.
This study shows use of captopril alone or concurrently with tolbutamide does not interfere with B.G.C. in diabetic rats.

F : IIC : 77  ACUTE EFFECT OF FLUORIDE ON IN VIVO INTESTINAL ABSORPTION OF CERTAIN NUTRIENTS IN RATS

S. GHOSH
DEPARTMENT OF PHYSIOLOGY, KASTURBA MEDICAL COLLEGE, MANGALORE.

The presence of very high doses of fluoride in intestinal lumen in man, in conditions such as accidental intake of fluoride, treating osteoporotic patients with fluoride tablets, consumption of dietary rock salt containing a high level of fluoride may exert a harmful effect on gastro intestinal tract.

To assess the effect of high levels of fluoride on the absorptive function of intestine, isolated jejunal and ileal sacs were prepared in anesthetized rats. Sodium fluoride at concentrations of 500 ppm, 100 ppm and 50 ppm were mixed with either D-Glucose, L-Proline or sucrose solutions. Each mixture was introduced in the loops and the rate of disappearance of the nutrients were determined. Fluoride at 500 ppm concentration did not hamper either absorption of proline or sucrose, but caused highly significant inhibition of glucose transport. Glucose absorption was significantly depressed from both jejunal and ileal sacs in the presence of 100 ppm fluoride whereas at a level as low as 50 ppm of fluoride, transport of glucose from only ileal sacs were inhibited.

Therefore it appears that the presence of fluoride at high concentration in intestinal lumen has no direct effect on absorptive surface (mucosal brush border), but can selectively inhibit in vivo glucose absorption.

F : IIC : 78  A STUDY ON THE EFFECT OF OCIMUM SANCTUM SEED EXTRACT ON THE BLOOD SUGAR OF NORMAL AND DIABETIC RATS

DEBI P. DEVI S., PATNAIK S.B., DAS M. PANDA P., PATNAIK S., S.C.B. MEDICAL COLLEGE, CUTTACK.

The species Ocimum Santum is considered to be highly sacred medicinal plant and finds extensive application in the indigenous system of medicine of many countries.

In the present study, the effect of seeds of ocimum sanctum on blood glucose has been studied in normal and diabetic induced rats.

Forty healthy albino rats of either sex weighing between 100-200 gms were chosen and they were divided into four groups, ten in each. Group I served as control, Group II was treated with seed extract of ocimum sanctum 0.5 g/kg orally. Group III was treated with alloxan 20 mg/kg S.C. as a single injection. Group IV was treated with ocimum extract after inducing diabetes with alloxan.

The blood group glucose estimation was done before and after 1½ hour of administration of the ocimum extract in normal and diabetic rats by the method of Nelson - Somogyi.

The seed extract of ocimum sanctum causes significant lowering of blood glucose in normal as well as diabetic induced rats.

F : IIC : 79  CARDIOVASCULAR EFFECT OF KETAMINE HYDROCHLORIDE

P. PANDA, P.P. DEVI, C. DEVI, Q. AHMED
DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK

Ketamine, a non-barbiturate and non-narcotic agent produces dissociative anaesthesia. There are controversial reports about the effect of ketamine on cardiovascular system. The present study has been taken to study the effects of ketamine on cardiovascular system by using perfused toad's heart in situ and anaesthetized dog blood pressure.

Graded doses of ketamine hydrochloride produces depressant effect on perfused toad's heart with marked reduction of amplitude of contraction without any effect on tone and rate; these effects were not blocked by Atropine.
On anaesthetized dog blood pressure graded doses of ketamine produced transient fall in arterial pressure followed by rise of blood pressure in low doses, but with higher doses level though transient fall in arterial pressure was observed and it was followed by return of blood pressure to pretreatment level, but the prolonged pressor response was not observed. The initial fall of blood pressure was not blocked by Atropine or chlorpheniramine maleate.

The observed effect are in agreement with those of Chang, P and Chan, 1969 who reported fall of blood pressure and depressing heart in conscious and anaesthetized rats. The significance of these observations will be discussed.

F: II C: 80 PHYSICAL PROPERTIES OF HONEY

MAHANTAYYA V. MATH AND P. BALASUBRAMANIAM
M.G.M. MEDICAL COLLEGE KAMOTHE, NEW BOMBAY, MAHARASHTRA STATE

Honey is used in treating Helicobacter Pylori infection of gastric mucosa. This action of honey is due to its local action on gastric mucosa. We have studied the physical properties of honey which can contribute for its local action.

The specific gravity of honey used in this study was 1.404. The viscosity of honey (with Redwood Viscometer) at 28°C (room temperature) was 13.2868 centistokes (12.9921 to 13.6466 centistokes or 5260 to 5525 Redwood seconds). At 37°C the viscosity of this honey was 6.8425 centistokes (6.8170 to 6.8664 centistokes or 2760 to 2780 Redwood seconds). The viscosity of the honey at 28°C was 239.06 times that of distilled water and at 37°C the viscosity of honey was 125.9 times that of distilled water.

The high specific gravity and viscosity of honey helps in the formation of stable gel layer over the gastric mucosa and these physical properties may contribute towards its action against helicobacter pylori infection and protection of gastric mucosa.

F: II C: 81 STUDY OF THE EFFECTS OF CALCIUM CHANNEL BLOCKERS ON EXPLORATORY BEHAVIOUR IN ALBINO RATS

PATNAIK JYOTSNA, DAS M, BEHERA J.P.,
DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK.

Calcium channel blockers Nifedipine and Verapamil have been reported to have depressant action on psychomotor performance and higher mental functions (Jagusti, V.B, Dadkar, V.N. 1989). This work has been undertaken to study the effects of commonly used Calcium Channel Blockers Nifedipine, Verapamil, and Deltiazem on Exploratory behaviour in albino rats by using 'Y' maze (Rushton and Steinberg 1963) and compared with Standard drug Diazepam.

78 albino rats, both sexes, 100-150 gms wt were selected and divided into 13 groups (6 in each). 1st group - Control, treated with normal saline 0.5 ml I.P. Diazepam 8, 10, 12 mg/kg I.P. to 2nd, 3rd, 4th groups, Nifedipine 70, 80, 90 mg/kg I.P. to 5th, 6th, 7th groups, verapamil 50, 80, 100 mg/kg I.P. to 8th, 9th, 10th and Deltiazem 80, 100, 120 mg/kg I.P. to 11th, 12th, 13th groups of rats respectively.

Rat of each group placed in centre of 'Y' maze and number of entries to '3' ways of 'Y' maze with its '4' limbs in 5 minutes observed at 60 minutes after drug administration and mean and percentage decrease of mean from that of control were calculated.

It was observed that Diazepam, Nifedipine, verapamil and Deltiazem decrease number of entries. But the percentage of decrease from that of control was statistically significant only in 12 mg/kg with Deltiazepam and with all doses of verapamil but not significant with any dose of Nifedipine and Deltiazem.

F: II C: 82 EVIDENCES FOR ADENOSINE AS AN ENDOGENOUS ANTICONVULSANT SUBSTANCE

Y.K. GUPTA AND JATINDER MALHOTRA
DEPARTMENT OF PHARMACOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI

Since Seizures normally terminate spontaneously and abruptly, role of some endogenous factors has been postulated. Of the various putative endogenous anticonvulsant substances, adenosine is finding support
from both clinical and laboratory observations. In our experiments using male 'wistar' rats, seizures were induced by pentylenetetrazole (60 mg/kg, i.p.). Adenosine 1000 mg/kg, i.p., 5 min, pretreatment and the specific adenosine A1 receptor agonist, N6-cyclopentyladenosine (CPA), 10 mg/kg, i.p., 60 min, pretreatment, showed significant protection against acute PTZ-induced seizures while, specific adenosine A1 receptor agonist 5'- (N-cyclopropyl) carboxamidoadenosine (CPCA) up to 10 mg/kg was ineffective. The adenosine analog, 2-chloroadenosine, in a dose of 5 mg/kg was only partially protective and increasing the dose to 10 mg/kg, this protection was attenuated. When rats were pretreated with theophylline, (a non specific adenosine receptor antagonist) in doses up to 50 mg/kg or a specific adenosine A1 receptor antagonist, 8 - cyclopentyl - 1, 3 - dipropylxanthine (DPCPX), in doses up to 5 mg/kg, before the maximally protective doses of adenosine and CPA the protection of these drugs is completely reversed. The specific adenosine A1 receptor antagonist, DMPX however failed to reverse this protection. Thus stimulation of adenosine A1 receptor mediates the anticonvulsant response.

F : IIIC : 83 EFFECT OF CYSTONE, A HERBAL FORMULATION ON GLYCOLIC ACID INDUCED UROLITHIASIS IN RATS

S. GOPUMADHAVAN, M.V. VENKATARANGANNA, R. SUNDARAM, S.D. ANTURLIKAR AND S.K. MITRA

R & D CENTRE, THE HIMALAYA DRUG CO., BANGALORE-562123, INDIA

The worldwide incidence of urolithiasis is quite high and inspite of tremendous advancements in the field of medicine, there is no truly satisfactory drug for treatment of kidney stones. Most patients still have to undergo surgery to get rid of this painful disease. Keeping this in mind, a study was undertaken to investigate the effect of Cystone, a herbal formulation on experimentally-induced urolithiasis in rats. Oxalate urolithiasis in male rats was produced by the addition of 3% glycolic acid to their diet for a period of 42 days. Thirty male rats of wistar strain, were divided into three groups of ten in each. Group I served as control, Group II received 3% glycolic acid in diet and Group III received 3% glycolic acid in diet plus 500 mg/kg b.wt. of Cystone orally as an aqueous suspension. Weekly body weight was recorded during the entire duration of the experiment. Glycolic acid treatment resulted in significant increase in the levels of kidney calcium and oxalate as well as the total kidney weight. Also, the urinary oxalate, calcium and inorganic phosphorus levels were increased and urinary sodium levels were decreased. These parameters were reversed by simultaneous treatment with Cystone. The reduction of urinary and renal tissue oxalate levels in Cystone treated animals may be possibly due to its inhibitory action on oxalate synthesising liver enzyme glycolate oxidase. Thus, Cystone can play an important role in the prevention of disorders associated with kidney stone.

F : IIIC : 84 CHANGES IN POLYAMINE METABOLISM FOLLOWING DMBA INDUCED MAMMARY CORCINOMA IN LABORATORY BRED SWISS MICE

KRISHNA MUHKOPADHAYA, A.K. GANGULY & SWAGATA ROY,

DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICINE, UNIVERSITY OF CALCUTTA, 244B, A.J.C. BOSE ROAD, CALCUTTA-700020.

In an attempt to Co-relate polyamine metabolism with carcinomatous growth, mammary gland carcinoma was produced in the laboratory bred swiss mice by a single dose intraperitenial administration of DMBA (dimethyl benzanthracene).

The mammary gland carcinoma was confirmed by histopathological examination. In all the cases carcinoma developed within a period of six months.

Each growth was analysed for spermine, spermidine, putrescine and cadaverine and expressed in μgm/gram tissue. It could be seen that all the polyamine fractions have increased in comparison to the adjoining normal tissues. The spermine, spermidine, putrescine and cadaverine concentration had gone up from 62.9 to 129.35, 53.7 to 99.5, 55.39 to 105.47 and 29.72 to 52.5 μgm/gm tissue respectively and these difference were highly significant. The polyamine concentrations of the pooled blood serum of the animals with mammary carcinoma was also measured and compared with the polyamine concentration of pooled blood of control animals.
It appears that there is a rise and the rise in serum polyamine concentration reflects the proliferative behaviour of cells in carcinomatous growth like mammary carcinoma. In other words serum polyamine levels can give an indication of the cytokinetic parameters of the DMBA induced neoplastic cells and their normal counterpart parts.

F: IIIC: 85 CHANGES IN THE BLOOD LIPID PROFILE AFTER ADMINISTRATION OF OCIMUM SANCTUM (TULSI) IN HYPERLIPIDEMIA INDUCED ALBINO RATS

DEVI, S.; DEVI P.P.; PATNAIK, S.; PATNAIK SHAKTI AND DAS, M.
S.C.B. MEDICAL COLLEGE, CUTTACK.

The genus Ocimum is a group of aromatic plant. It has extensive application in the indigenous system of medicine.

The Physiological and Pharmacological studies carried out by various workers have reported anti-stress, hypotensive, hypoglycaemic and hypolipidaemic effect of Ocimum sanctum leaves in albino rabbits. The present work is undertaken to study the effect of Ocimum sanctum seed extract on the lipid profile of hyperlipidaemia induced Albino Rats.

30 (thirty) healthy albino rats (150-200 gms) were selected and their fasting blood total lipid levels were estimated. First group A1 (n=10) - served as control. They were given normal basal diet for 4 weeks. Other rats A2 (n=10) and A3 (n=10) were given fat diet (Basal diet + 1% cholesterol powder) for 4 weeks to induce hyperlipidaemia. A2 group - were given fat diet + 0.2 ml (0.5 gm/kg) - Ocimum sanctum extract for 4 weeks. A3 group - given fat diet + 0.4 ml (1 gm/kg) - O. sanctum seed extract for 4 weeks. Blood total lipid levels were estimated at the end of 1st, 2nd, 3rd and 4th weeks in A1, A2, A3 groups. Their mean and S.D. values were calculated. Paired 't' test shows significant reduction in total cholesterol, Triglyceride, LDL cholesterol and increase in H.D.L. cholesterol values in A2 and A3. The effect is dose dependant.

F: IIIC: 86 EFFECT OF GARLIC ON MICROSOMAL ENZYMES IN ALBINO RATS

PATEL, D., NAYAK, P., MISRA, N.N., DAS, M.,
DEPARTMENT OF PHARMACOLOGY, S.C.B. MEDICAL COLLEGE, CUTTACK.

Many drugs either induce or inhibit microsomal enzyme. Recent report shows that Garlic (Allium Sativum Linn) reduce serum Cholesterol level inducing microsomal enzyme. Keeping this in view the effect of Garlic on thiopental induced sleeping time, mephenesin induced paralysis time and Mean weight of liver/100gm in albino rats were studied.

Albino rats of either sex weighing 100 to 200 gms. were taken in 3 groups (10 in each) and injected the following drugs for 4 days.

Group I (Control Group) - Propylene glycol - 0.4 ml daily I.P.
Group II (Standard Drug) - Gardinal sodium - 1.5 mg twice daily I.P.
Group III Garlic (25gm/100ml of distilled water) 0.5 ml twice daily I.P.
- on 5th day sleeping time recorded injecting thiopental sodium (2mg/100gms. body weight).
- on 6th day paralysis time recorded injecting mephenesin hydrochloride (0.2ml/100gm of body weight).
- on 7th day rats were sacrificed and liver weight were determined in gm/100 gm of body weight.

Reduction of sleeping time and paralysis time and increase in liver weight were the index of enzyme induction. Gardinal sodium was taken as Standard drug. Since it is an established inducer of Microsomal enzyme. The effect of garlic was compared with gardinal sodium.

Sleeping and paralysis time were reduced and liver weight was increased than the control group significantly in rats receiving garlic suggestive of microsomal enzyme induction.
ANTICONVULSANT ACTION OF ONDANSETRON


The incidence of epilepsy in normal population is 0.05% to 2%. All standard antiepileptics cause toxicities and lack selectivity. Search for newer antiepileptics led to introduction of FLUOXETINE a 5HT reuptake inhibitor. (Yan O.S., et al, 1994). ONDANSETRON a 5HT3 receptor antagonist is probed here for possible anticonvulsant action.

In this study 32 albino rats of both sexes weighing between 150-225gms and having MET between 150-225gms and having MET between 20 to 30 mAU were selected (Swinyard et al, 1952). They were divided into 4 groups.

Group I received Ethosuximide 100mg/kg body weight I.P. (Standard).

Group II, III & IV received ONDANSETRON in a dose of 1mg/kg, 2mg/kg and 4mg/kg body weight respectively I.P.

MET was recorded at -1/2hr, '0' hr., +1/2hr., +1hr. and +11/2hr. of administration of drug.

The -1/2 hr. value served as control (basal MET). The animal was considered to be protected if the basal MET was elevated. The percentage of protection in each group at different time intervals was calculated. Elevation of MET and percentage of protection in drug treated groups were compared with that of Ethosuximide treated group. The results were analysed statistically by paired 't' test.

Ondansetron elevated the basal MET significantly at all doses level. Percentage of protection provided by ONDANSETRON was highly significant in comparison to the standard drug.

ONDANSETRON seems to possess anticonvulsant action.

PREVENTION OF DYSLIPIDEMIA IN CHOLESTEROL FED RABBITS BY LOW DOSE FELODIPINE


Calcium channel blockers possess anti-atherosclerotic effect according to many human and animal study (HENRY P.D. 1990). Low dose felodipine has significantly prevented cholesterol induced endothelial dysfunction in rabbits (Becker 1991). Taking all these facts into consideration the present work was undertaken to study the effect of low dose felodipine on serum lipid profile of rabbits fed on cholesterol enriched diet (A.D.)

METHODS: 40 male Newzealand rabbits were randomly selected and assigned to diet/drug in 4 equal groups of 10 each. Gr-I rabbits received standard diet with vehicle, while groups-II,III and IV rabbits received A.D. Felodipine (0.46mg/kg. per day) was administered to group-III rabbits from day-1 of A.D. while group-IV received the same dose of drug after one month of atherogenic diet.

Serum cholesterol (TC), Triglyceride (TG), HDL Cholesterol (HDLc) and weight of rabbits were recorded at basal (before specialised diet) at the end of 4th and 16th week of study period. Serum lipid profile was estimated by using kits.

RESULTS: Felodipine treatment prevented the rise of all lipid parameters except Serum HDLc which was increased after early administration of felodipine (P<0.005). This beneficial effect cannot be appreciated better after late administration of felodipine.

Thus prophylactic low dose felodipine treatment has beneficial effect in hyper-cholesterolemic rabbits.

A COMPARATIVE STUDY OF THE ANALGESIC ACTIVITY OF KETAMINE AND MORPHINE IN RATS.

MOHAPATRA SABITA, DAS. M., MANUNGO. S., MISHRA S.S., DAS, M.C.

Ketamine, the general anaesthetic, is endowed with profound analgesic property which gives wider scope for its extensive use in clinical practice. (Sodove et al 1974, Slogoff et al 1979). The present study has been
undertaken to ascertain the potency and efficacy of this useful analgesic activity of Ketamine in relation to the standard analgesic, morphine.

Fortytwo healthy albino rats of both sexes were selected for this study. They were divided into seven equal groups. group-1 received Normal Saline 0.5ml i.p., groups 2, 3 and 4 received Ketamine 5, 10 and 20 mg/kg i.p. respectively and the groups 5, 6 and 7 received morphine 0.5, 1 and 2mg/kg i.p. respectively. Each dose of drug was administered intraperitoneally, at 0 min, to the rats and their basal and post-drug pain threshold at 15, 30 and 60 minutes was determined using a pressure Analgesiometer, utilising the Measured Caudal Compression Test. The results were analysed statistically and the 10g dose - probit curves were drawn for both drugs to determine their potency and efficacy.

In this study, Ketamine was found to be 0.646 times potent than morphine and the efficacy at Ketamine was more than that of morphine as an analgesic.

F : III C : 90 ANTISTRESSOR EFFECT OF OCIMUM SANCTUM ON NOISE INDUCED CHANGES IN ORGAN WEIGHT OF ALBINO RATS


Ethanol extract of Ocimum Sanctum (OS) leaves was screened for its antistressor activity against acute noise stress in albino rats by determining the organ weight/body weight ratio. The organs studied were spleen, thymus, adrenal cortex and lymph nodes.

There was significant increase in the weight of adrenal glands and lymph nodes and significant decrease in the weight of spleen and thymus after exposure to noise (100 dB, 10 KHz) stress for 30 minutes.

Pretreatment of animals with ethanol extract of OS prevented the changes in these organs induced by exposure to acute noise stress. Thus the study suggests the antistressor property of the plant against noise stress.

F : III C : 91 IRON DEFICIENCY IN SICKLE CELL DISEASES


21 cases of Sickle cell anaemia (SS), 10 cases of Sickle cell Trait (AS) and 4 cases of Sickle cell thalassaemia were screened for Hb, PCV, MCH, MCHC, Serum Iron, TIBC, % Transferrin Saturation and marrow staining for Iron in some selected cases. 10 healthy cases were taken as controls.

Hypochromic microcytic anaemia was observed in 14 cases of SS and 4 cases of Sickle cell Thalassaemia. All other cases had normocytic normochromic anaemia, SI, TIBC & % Transferrin saturation in the control group were 101.6 + 9.6 mcg/100 ml 304.6 + 51.3 mcg/100 ml and 33.9 + 4.4% respectively.

14 cases of SS with microcytic hypochromic anaemia has significantly low SI, high TIBC and low % transferrin saturation and poor bone marrow staining of Iron, indicating severe Iron deficiency. But 4 cases of sickle cell thalassaemia with microcytic Hypochromic anaemia and other 7 cases of SS & 10 cases of AS with normocytic normochromic anaemia had near normal SI, TIBC and % transferrin saturation indicating no Iron deficiency. 10 of the 14 cases who were Iron deficient were given Iron therapy for 8 weeks. Haematological parameter, SI % transferrin saturation improved. But all experienced painful crisis.

Hence Iron therapy, in these SS cases with Iron deficiency although improved the haematological parameter, is actually hazardous as it precipitates crisis.

F : III C : 92 INTERACTION OF CALCIUM CHANNEL BLOCKERS (NIFEDIPINE) AND SULFONYLUREA (TOLBUTAMIDE) ON BLOOD GLUCOSE CONCENTRATION IN DIABETIC RATS


Many of the conventional antihypertensives like diuretics and Beta blockers produce metabolic side effects like hypoerglycemia and hyperlipidaemia - potential risk factors for CHD and when administered concurrently
with antidiabetic like sulfonylurea may modify the antidiabetic effect of the later in a person suffering from both diseases. Nifedipine, a CCB, is another widely used antihypertensive agent at present. But reports regarding its metabolic side effects are very much conflicting. Therefore the present study was undertaken to find out the interaction of tolbutamide with nifedipine on blood glucose concentration in diabetic rats.

50 Albino rats (100 to 200 gm) of either sex were taken and divided into 5 groups. Group 1 served as control. Group 2 - injected with alloxan 200 mg/kg s.c. single dose. Group 3 - treated with alloxan 200 mg/kg s.c. and tolbutamide 6.25 mg/kg orally. Group 4 treated with alloxan + Nifedipine 10 mg/kg. Group 5 treated with alloxan + Tolbutamide + nifedipine.

Blood samples were collected at different time intervals and B.G.C. was estimated by glucose oxidase peroxidase method in spectrophotometer and results were analysed statistically.

It was observed that nifedipine used alone or in combination with tolbutamide does not interfere in B.G.C. in diabetic rats.

F : IVC : 93 CYTOPROTECTIVE AND EFFICIENCY OPTIMISING EFFECT OF STRESSZEE AGAINST ROUTINE MENTAL AND PHYSICAL STRESS IN BANK CLERKS AND GYMNAS-T-BODY BUILDERS

S.K. TONGIA, S. BOSE, H.L. JAIN
DEPARTMENT OF PHARMACOLOGY & PHYSIOLOGY, M.G.M. MEDICAL COLLEGE, INDORE (M.P.)

Stresszee capsule a brand compound formulation of active principles of three Indian medicinal plants, viz. (i) ocimum sanctum 133.3 mg. (ii) Withania somnifera 133.3 mg. and (iii) Emblica officinalis 133.3 mg. processed with a Liposome delivery system of natural origin has been clinically, biochemically and echocardiographically evaluated for its effect on mental and physical efficiency in 20 male healthy volunteers - 10 Bank Clerks (age 30-45 years) exposed to routine mental stress of clerical work and 10 body builders - Gymnasts (aged 18-24 years) exposed to routine physical stress of body building exercises. The capsule of stresszee was administered orally twice a day for 4 weeks and the evaluation was carried out on subjective and objective paradigm at 0 day, 15th day and 30th day of continued (uninterrupted) administration.

On subjective paradigm scale, Stresszee was observed to have raised (i) concentration in work (ii) working speed (iii) mental fatigue onset time against chronic mental stress of bank clerks and (i) working speed (ii) physical fatigue onset time against chronic physical stress of body building gymnasts. This concludes that there occurs an increase in mental and physical efficiency following the use of Stresszee.

On objective paradigm scale, Stresszee was assessed to (i) raise blood Hb. (ii) lower high fasting blood sugar (iii) lower total cholesterol LDL and TG while raising HDL (iv) lower serum cortisol and urinary VMA (v) raise Serum CPK and serum LDH towards upper level of physiological norms in physically stressed individuals (vi) lower serum creatinine and SGPT, thus showing cytoprotective effect on kidney, liver, and heart. In echocardiographic study to protective changes were observed.

F : IVC : 94 EFFECT OF VENTROMEDIAL HYPOTHALAMIC (VMH) NUCLEUS LESION ON SUCROSE & SACCHARINE INTAKE

C. RAMASWAMY
DEPARTMENT OF PHYSIOLOGY, KASTURBA MEDICAL COLLEGE (K.M.C.), MANGALORE.

Male wistar rats (200-250g) were divided into five groups on the basis of the type of fluid provided to them. The first three groups received either water, 12% sucrose or 0.2% saccharine solutions without choice (single bottle groups). The fourth group had a choice between water and sucrose and the fifth between water and saccharine (two bottle groups). All the groups were subjected to VMH lesion. The rats were provided with food and fluid ad lib. The daily fluid intake was recorded and analysed.

During pre-lesion period, among the single bottle groups; the fluid intake was in the order of saccharine>sucrose>water. VMH lesion, though increased fluid intake in all the three groups fluid consumption in the post-lesion period was in the order of saccharine>water>sucrose.
But the two bottle groups, during the pre-lesion period, consumed more water than the solutions and the volumes consumed were comparable. After VMH lesion, the water consumption increased to the same extents in both the groups. The saccharine consumption was also increased but the sucrose intake did not change. As a result, the total fluid intake in the fifth group was more than that of the fourth.

The results indicate that pure taste (saccharine) enhance the VMH syndrome, but when metabolic effect was added to taste (sucrose) it was inhibited.

F : IVC : 95 ELECTROPHYSIOLOGICAL CORRELATES OF CINGULATE GYRUS IN NOCICEPTION

MENA N.B., SINHA, R, SHARMA, R, MATHUR, R AND NAYAK, U.
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, ANSARI NAGAR,
NEW DELHI-110029.

The cingulate gyrus, one of the important limbic structures, has been shown to be involved in sensory, emotional and affective aspects of pain. Earlier, we reported that cingulate gyral stimulation produced analgesia in tonic and affective nature of pain. In the present study, it has also been shown that the bilateral cingulate gyral stimulation (0.6s trains of 50 Hz, 0.2 ms, current strength 50 and 100 µA for 15 sec) produced analgesia in tooth-pulp stimulation (TPS) evoked nociceptive jaw opening reflex. In addition, the cingulate neuronal responses to peripheral noxious stimuli were studied by electroencephalography and single unit recording in urethane anesthetized rats. The electroencephalogram (EEG) of cingulate gyrus showed desynchronization when strong noxious stimuli were applied peripherally. The TPS with 2 mA/10 sec produced a marked decrease whereas higher current strength (4 mA/10 sec) increased the EEG amplitude. A large number of cingulate EEG responses showed a decrease in amplitude and frequency following noxious electrical stimuli (7 and 9 mA/10 sec) to tail. Thermal stimulus (38°C) did not show any effect on frequency and amplitude while noxious thermal (48°C) stimulus produced a marked decrease in amplitude from 185.27±10.77 µV to 152.7±11.63 µV. The noxious mechanical pinch either to hindlimbs or tail produced a significant reduction in the cingulate EEG amplitude. Subcutaneous injection of 5% formalin into the contralateral hindpaw produced a decrease in the cingulate EEG amplitude. The cingulate neurons showed burst activity in response to peripheral noxious electrical (3 and 5 mA/10 sec), thermal (40°C and 60°C/15 sec) and chemical (5% behavioural and electrophysiological studies that cingulate gyrus has a vital role in tonic and phasic pain modulation and it has large nociception specific receptive fields.

F : IVC : 96 RESPONSE OF BRAIN GLUTAMIC ACID SYSTEM TO IMIPRAMINE TREATMENT IN PYRIDOXINE-DEPRIVED RATS

M.K. RAY AND A.K. CHATTERJEE
DEPARTMENT OF PHYSIOLOGY, B.L.D.E.A. SRI B.M. PATIL MEDICAL COLLEGE, BIJAPUR, KARNATAKA,
DEPARTMENT OF PHYSIOLOGY, CALCUTTA UNIVERSITY, CALCUTTA-700009.

The effect of pyridoxine deficiency on the response of the brain to imipramine (a tricyclic antidepressant) treatment in terms of changes in glutamic acid system was studied in rats receiving either 18% or 6% protein diet. Pyridoxine deficiency was induced by including deoxypyridoxine, and antagonist of vitamin B<sub>6</sub>, in the diet.

Imipramine treatment of rats receiving 18% protein diet increased glutamic acid and γ-aminobutyric acid (GABA) levels in the brain, while glutamine level was decreased. Pyridoxine-deficient rats receiving an 18% protein diet exhibited similar changes in brain glutamic acid, GABA and glutamine levels following imipramine treatment. However, percentage changes in brain GABA and glutamine levels following imipramine treatment were more marked in pyridoxine-deficient rats. Imipramine treatment of pyridoxine-deprived rats fed on a 6% protein diet raised the brain glutamic acid level by about 48% compared to about 80% observed in corresponding control group of rats, while the percentage increases in the brain GABA levels were found to be comparable between these two groups of rats. The percentage decrease in brain glutamic acid levels following imipramine treatment were about 51% and 42%, respectively, in pyridoxine-supplied and pyridoxine-deprived groups of rats receiving 6% protein diet. These studies indicate that pyridoxine deficiency alone or in combination with protein deficiency can modulate the response of the brain to imipramine treatment in relation to glutamic acid system.
F : IVC : 97  FOOD PREFERENCE BEHAVIOUR AND NEURAL PLASTICITY IN LATERAL HYPOTHALAMIC NEURONS

H.N. MALLICK, T. KONDOH, E. TABUCHI, T. ONO,4 AND K. TORII,
DEPARTMENT OF PHYSIOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110029, INDIA.

Changes in single neuronal activities recorded from the LHA (Lateral hypothalamic area) and the ventromedial hypothalamic nucleus (VMH) in behaving rats were studied during cue tone presentation and ingestion of MSG (Monosodium glutamate), arginine, glycine, threonine, lysine and saline. The rats were either maintained on a control or a lysine-deficient diet. The LHA neurons mostly responded nondifferentially to licking of amino acids in control rats. The only differential neurons encountered were MSG specific neurons which responded to licking of MSG solution only. Such specificity to MSG was not found in lysine-deficient animals. But some LHA neuronal responses were specific to lysine in lysine-deficient condition. These specificity could be related to those in behavioural study where MSG was most preferred in control and lysine was most preferred in lysine-deficient rats. The iontophoretic study also showed that the LHA neurons were responsive to lysine in the lysine-deficient rats but not in the controls. Although few percentage of the VMH neurons responded during cue tone and licking, there were no such specific response to MSG. These findings suggest that the LHA is a neural site for recognition of amino acids. It also mediates selective ingestive behaviour for a deficient nutrient L-lysine. The change in the preference for MSG in normal nutritive condition to lysine in lysine-deficient condition indicates possible neural plastic changes in the LHA neurons.

F : IVC : 98  AUTONOMIC ACTIVITY IN GLAUCOMA

VEENA MEHTA AHUJA & RAMESH KUMAR
DEPARTMENT OF PHYSIOLOGY, MAULANA AZAD MEDICAL COLLEGE, NEW DELHI.

The present study was carried out to assess the autonomic status of patients diagnosed for primary open angle glaucoma (POAG) and primary angle closure glaucoma (PCAG) attending Guru Nanak Eye Centre attached to Maulana Azad Medical College, New Delhi. Twenty normal male subjects (control group) and twenty each of PCAG and POAG were chosen for assessing the autonomic functions belonging to similar age group. The parameters for assessment included (i) Resting Heart Rate, (ii) S/L ratio, (iii) Valsalva ratio, (iv) Galvanic Skin resistance (v) Cold Pressor response. The present study is suggestive of decreased parasympathetic activity and an increased sympathetic activity in PCAG group and a decrease in both sympathetic and parasympathetic activity in POAG group as compared to normal subjects.

F : IVC : 99  "PAIN AND SEPTAL NUCLEI"

A.G. JOSHI, S.V. BRID, P.M. SOMADE

Tail Flick Latencies (TFL) in septally lesioned male rats (n=20) and Sham operated male rats (n=20) were recorded. The results show that in septally lesioned rats the TFL were decreased (P<.01) confirming our earlier findings. It is known that septum is thickly populated with opiate receptors. The aim of the present study was to explore the role of these receptors in modulation of pain. Another 20 male rats were implanted with 24 gauge cannulae intraseptally. After the recovery from the operation the animals were randomly divided in 2 groups. In experimental group (n=10), 2 μg of Nalaxone in 2 μl of 0.9% buffered saline and in Sham group 2 μl of 0.9% buffered saline was injected intraseptally. TFL in both the groups were recorded immediately after 5 minutes, after 15 minutes and after 30 minutes. The results show that TFL increased after intraseptal injection of Nalaxone as compared to intraseptal injection of 0.9% saline (P< 0.01). If endogenous opioids are involved in intrinsic mechanism of pain inhibition and nalaxone antagonizes all opioid like substances, then nalaxone itself should produce hypersensitivity to painful stimuli. In present study nalaxone produces agonist like response, suggesting that the neurochemistry underlying the action of nalaxone needs to be re-examined.
F : IVC : 100 RAPID EYE MOVEMENT SLEEP DEPRIVATION ASSOCIATED CHANGES IN BLOOD PROTEINS OF WISTAR RATS

BIBHUTI BHUSAN MISHRA, MUNA ALI, SANTOSH K. KAR, BIRENDRA N. MALLICK
SCHOOL OF LIFE SCIENCES AND CENTRE FOR BIOTECHNOLOGY, JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI-110067.

Since rapid eye movement sleep (REMS) deprivation increases brain excitability, muscular activity, metabolism and activities of several enzymes in the brain involved in those changes, it is likely that some changes will be reflected in the chemistry of the blood. Therefore, changes in serum protein patterns were analyzed in blood samples collected from normal, REMS deprived and control rats.

Male wistar rats of 230-260 gms, maintained with food and water ad lib under 12:12 L-D cycle were REMS deprived by the flower pot (6.5 cm dia) method. Normal, large platform (13 cm dia) and recovered rats were used as controls. Blood samples were collected on the 0'th, 4'th, 7'th, 9'th and 11'th day after REMS deprivation and on large platform as well as after the 4'th day post-REMS deprivation. Changes in serum protein levels were analyzed after separation by 15% as well as 7.5-15% gradient SDS-PAGE.

One high mol. wt. protein band (>200 kd) decreased while a low mol. wt. band (approx. 25 kd) increased after REMS deprivation. These changes in the intensity of the protein bands were proportional to the length of deprivation and returned to normal level after recovery. No such change was observed in the control rats.

Characterization of the proteins and their physiological role in sleep-wakefulness-REMS are under study.

F : IVC : 101 RELATIVE ROLE OF ADRENERGIC AND CHOLINERGIC RECEPTORS IN CORTICAL EEG DESYNCHRONIZATION.

FAKRUL ISLAM, STEPHEN THANKACHAN, AND BIRENDRA N. MALLICK
SCHOOL OF LIFE SCIENCES, JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI-11 0067 AND "DEPARTMENT OF MEDICAL ELEMENTOLOGY AND TOXICOLOGY, JAMIA HAMDARD, HAMDARD UNIVERSITY, NEW DELHI.

The brain stem reticular formation (BSRF) is known to induce cortical EEG desynchronization. On the other hand, isolated studies have shown that both norepinephrine as well as acetylcholine induce EEG desynchronization. This study was aimed at examining the relative role of those neurotransmitters in BSRF stimulation induced cortical EEG desynchronization.

Under surgical anaesthesia (35 mg/kg, ip, pentobarbitone) three cats (2.5-3.5 kg) were prepared for chronic sleep-wakefulness recording. Bipolar stimulating electrodes were implanted in the BSRF (A2, L3, H-1). After recovery bipolar EEG, EOG and EMG were recorded pre- and post-BSRF stimulation (100Hz, 300μsec, 200-400μA, for 8-10 sec) before (control) and after intraperitoneal injection of cholinergic antagonist scopolamine (50μg/kg); adrenergic α2-agonist, clonidine (25g/kg), α1-antagonist, prazosin (1mg/kg) and β-antagonist, propranolol (10mg/kg).

The effect on stimulation induced EEG desynchronization with or without i.p. injection of the receptor agonist and antagonists were statistically analysed. The BSRF stimulation induced EEG desynchronization was completely suppressed by the cholinergic blocker, scopolamine. There was an increase in desynchronization with clonidine, possibly due to reduced release of norepinephrine, however, the adrenergic blockers were ineffective in modulating the BSRF stimulation induced EEG desynchronization.

F : IVC : 102 COMPARISON OF NA+K+ATPASE ACTIVITIES IN RAT BRAIN MICROSOME AND SYNAPTOSOME

ANUPAMA ADYA & BIRENDRA N. MALLICK
SCHOOL OF LIFE SCIENCES, JAWAHARLAL NEHRU UNIVERSITY, NEW DELHI-110067.

Rapid eye movement sleep (REMS) deprivation increases microsomal Na+K+ATPase activity in the rat brain. We have shown that this increase could be due to a reduction in intracellular calcium concentrations as well as an increase in norepinephrine acting on alphadrenoceptors. Subsequently, to study the mechanism of action at the molecular level, synaptosomes were preferred, since it is rich in Na+K+ATPase. First, the enzyme activities in the synaptosome and the microsome were compared.
The brains of male Wistar rats (250-280 gm) were removed into ice cold homogenizing medium with or without EDTA within 2-3 min. of decapitation. The microsome and synaptosome were prepared from the same sample containing EDTA or without EDTA. Each of the samples was divided into two parts, in one, the enzyme activity was estimated immediately, while the other part was left overnight in hypotonic medium for lysis before the activity was estimated.

Although the unlysed synaptosome had an appreciable specific activity, the unlysed microsome showed very little. Comparison of the enzyme activity in the synaptosome and the microsome, prepared under similar conditions, showed that the former was always significantly higher than that of the latter. The enzyme activities (microsome and synaptosome) in the EDTA containing medium were significantly higher than respective non-EDTA preparations. All the lysed preparations, except non-EDTA synaptosome, showed a significant increase in the enzyme activity than the unlysed preparations.

F : ID : 103  MIDDLE LATENCY AUDITORY EVOKED POTENTIALS IN CONGENITALLY BLIND AND NORMAL SIGHTED SUBJECTS

K.V. NAVEEN & SHIRLEY TELLES,
VIVEKANANDA KENDRA YOGA RESEARCH FOUNDATION, BANGALORE, INDIA.

Middle latency auditory evoked potentials were recorded in two groups of ten subjects each, viz congenitally blind (CB) and age-matched subjects with normal vision (NV). The age range for both groups was 13 to 16 years. The CB group subjects had peripheral deficits, with absence of visual evoked responses. The peak latency of the Nb wave (the maximum negativity between 38 and 48 ms) was significantly lower in the CB group compared to NV group (p<.05, one-tailed, two factor ANOVA, Tukey test). In addition to these recordings from the vertex, recordings were also made from occipital areas, to test whether the visual cortex contributes to information processing at primary auditory cortical levels in the blind, as was reported in earlier studies on the generation of potentials during auditory selective attention. No such effect was observed. Hence it appears that in blind subjects changes in generators of auditory middle latency evoked potentials are mainly related to latency, rather than to scalp distribution of these components.

F : ID : 104  EFFECTS OF UNINOSTRIL PRANAYAMIC BREATHING ON DIVERSE PHYSIOLOGICAL FUNCTIONS

SHIRLEY TELLES,
VIVEKANANDA KENDRA YOGA RESEARCH FOUNDATION, BANGALORE, INDIA.

Ancient yoga texts have described breathing exclusively through the right nostril as "heat generating", whereas left nostril breathing was "heat dissipating". This abstract describes the effects of specific pranayamas practiced in normal volunteers. Pranayamic right nostril breathing (called surya anuloma viloma pranayama or SAV) does increase the oxygen consumption (OC) significantly in normal volunteers over a month (37%) and as an immediate effect of 45 min. of SAV practice (17%). While left (chandra anuloma viloma or CAV), and alternate nostril breathing (nadisuddhi or NDS) reduce the OC, the effect was not significant. The other immediate effects of SAV were a significant increase in cutaneous vasoconstriction and in systolic blood pressure. The effect of ten days practice of five groups of subjects SAV, CAV, NDS as well as two more practices, viz "breath awareness" or BAW and "mudras" or MDR were tested on hand grip strength measured for both hands with a dynamometer. Contrary to expectations (i.e. an increase with SAV alone), SAV, CAV and NDS increased both hands' grip strength significantly with no lateralized effect. Similarly four groups of subjects (practicing SAV, CAV, NDS, or BAW) were assessed with memory tests to assess "left brain functions" (verbal tests) and "right brain" (spatial memory). No lateralization effects were seen (e.g. right nostril breathing stimulating "left brain" or vice versa). All four groups showed significant improvement in all test scores after ten days of practice. The increase in spatial memory scores (84%) were more marked than verbal memory scores increase (26%), substantiating earlier claims that yoga practice enhances "right brain" functions.
AUTONOMIC IMBALANCES IN BRONCHIAL ASTHMA - AND THE EFFECTS OF YOGA THERAPY

MANOJ DASH, A.G. RAMAKRISHNA, R. NAGARATHNA, SHIRLEY TELLES,
VIVEKANANDA KENDRA YOGA RESEARCH FOUNDATION, BANGALORE, INDIA, * DEPARTMENT OF ELECTRICAL ENGINEERING, INDIAN INSTITUTE OF SCIENCE, BANGALORE.

It has been hypothesized that the pathology underlying bronchial asthma is an autonomic imbalance with parasympathetic hyperactivity. The present study compared the heart rate, breath rate, and galvanic skin resistance in 14 perennial asthmatics and 14 age-matched control subjects with no history of asthma or any allergic disease. The asthma patients had signs of psychophysiological arousal (higher heart rate, breath rate and lower skin response), characteristic of generalized sympathetic hyperactivity. The spectral analysis of the heart rate variability (HRV) through EKG allows the parasympathetic (high frequency 0.15-0.50 Hz) and sympathetic (low frequency 0.05-0.15 Hz). The percent ratio of the power of high/low frequency component which is indicative of parasympathetic tone was significantly higher (P<.05, t test) in bronchial asthma patients (average 233.9%) compared to normal subjects (152.8%). Hence cardio parasympathetic activity is increased in asthmatics. Preliminary studies suggest that 15 days of different yoga practices can reduce the signs of psychophysiological arousal (i.e. decrease heart rate, breath rate, regularize breathing and reduce peripheral vasoconstriction), as well as reduce the differences in HRV spectrum.

HIGHER PARASYMPATHETIC TONE IN MENTALLY HANDICAPPED CHILDREN COMPARED TO CHRONOLOGICALLY AGE-MATCHED CONTROL SUBJECTS

MANJUNATH N.K., A.G. RAMAKRISHNA, H.R. NAGENDRA, SHIRLEY TELLES,
VIVEKANANDA KENDRA YOGA RESEARCH FOUNDATION, BANGALORE, INDIA, * DEPARTMENT OF ELECTRICAL ENGINEERING, INDIAN INSTITUTE OF SCIENCE, BANGALORE.

These is a hypothesis that a normal level of sympathetic tone is a necessary prerequisite to focus attention. The present study was conducted to assess the autonomic status in eight mentally handicapped children (ages 10 to 29 years, with 4 girls). Causes were either birth trauma or genetic (Down's syndrome). Similar assessments were made on children of the same chronological age and sex who had a normal IQ and no other physical or mental disorder. The heart rate variability spectra were recorded by digitizing the EKG (lead I) and analyzing the R-R interval variability with time and frequency domain analysis. The high frequency component (HFC, 0.15-0.50 Hz) is indicative of parasympathetic tone while the low frequency component (0.05-0.15) correlates with sympathetic tone. There was a significant shift (P<.01, t-test) to the right of the HFC in the mentally handicapped group (peak frequency 0.29 Hz) compared to normal (0.18 Hz). These findings suggested a predominance of parasympathetic tone in the mentally handicapped. Possible correlations with their low attention span may be speculated.

HEART RATE VARIABILITY SPECTRAL COMPONENTS DURING NADISUDDHI PRANAYAMA

P. RAGHURAJ, H.R. NAGENDRA, R. NAGARATHNA, A.G. RAMAKRISHNA*, SHIRELEY TELLES,
VIVEKANANDA KENDRA YOGA RESEARCH FOUNDATION, BANGALORE, INDIA AND * DEPARTMENT OF ELECTRICAL ENGINEERING, INDIAN INSTITUTE OF SCIENCE, BANGALORE.

The present study was conducted on 10 normal healthy male volunteers (age range 22 to 31 years). The subjects were all familiar with the practice of yoga pranayama. Heart rate variability spectra from standard limb lead II were recorded in all subjects before (sitting in sukhasana for 5 min), during (15 minutes of nadishuddhi pranayama) and after (5 min in sukhasana), the EKG signal was digitized on-line and off-line analysis was done in both time and frequency domain. There was no change in the absolute value of heart rate (in bpm) during and post pranayama compared to pre pranayama. However there was a significant decrease in the high frequency power (percent) was significantly decreased during the practice (P<.05, paired t test, two tailed) compared to before. The high frequency component (0.15 to 0.60 Hz) is correlated with the vagal tone while the low frequency component (0.05 to 0.15) is correlated with cardiac sympathetic discharge. This suggested that vagal tone was significantly less during nadishuddhi pranayama. While many previous studies emphasized that parasympathetic stimulating effects of yoga practice there have been other reports suggesting that psychophysiological activation occurs during...
pranayama. Also, the present study demonstrated the advantage of heart rate variability over absolute heart rate in understanding autonomic status.

**F : ID : 108** DELAYED LATENCIES OF EVENT RELATED POTENTIALS IN RUBBER FACTORY WORKERS

**VIJAY KUMAR AND O.P. TANDON,**
DEPARTMENT OF PHYSIOLOGY, UNIVERSITY COLLEGE OF MEDICAL SCIENCES, DELHI-110095.

To investigate the effect of rubber factory environment on higher cognitive functions of the brain auditory P300 event related potentials were studied using 'oddball' paradigm in 27 rubber factory workers manufacturing tyres and tubes and 14 control subjects not exposed to rubber factory environment. Results showed significant prolongation of latencies of not only event related N2 and P3 components (N2=248.037 ± 34.048 m sec; P3 = 342.592 ± 50.829 m sec) but also stimulus related N1 and P2 components (n1 = 150.296 ± 43.113 m sec; P2 = 197.259 ± 43.494 m sec) in rubber factory workers when compared with control subjects (N2 = 213.071 ± 21.247 m sec; P3 = 309.142 ± 20.083 m sec; N1 = 109.714 ± 30.750 m sec; P2 = 167.214 ± 31.247 m sec). Out of 27 workers, 4 showed abnormal P300 latency as per criteria of 99 percent tolerance limit (any value above mean + 3SD of control). These cognitive alterations in rubber workers may be attributed to exposure to multitude of chemicals including solvents used in the manufacturing of rubber products.

**F : ID : 109** EFFECT OF ADENOSINERGIC MODULATION IN ANTICONVULSANT ACTION OF ANTIPILEPTIC DRUGS

**JATINDER MALHOTRA AND Y.K. GUPTA,**
DEPARTMENT OF PHARMACOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110 029, INDIA.

The effect of modulation of adenosinergic system using adenosine, theophylline, N-cyclopentyladenosine (specific adenosine A receptor agonist), and 8 - cyclopentyl-1, 3 - dipropylxanthine (DPCPX), the specific adenosine A, receptor Ant-agonist, on anticonvulsant action of carbamazepine and phenobarbitone in pentylenetetrazole - induced seizures (PTZ, 60mg/kg, i.p.) was studied. All experiments were carried out in male rats, 'wistar' strain, weighing, 150-200g. Theophylline 50mg/kg, completely reversed the protection of carbamazepine (20mg/kg), while the reversal was only partial in case of 100% protective dose of phenobarbitone (50mg/kg). The specific adenosine A, receptor antagonist, DPCPX (1mg/kg) could reverse the protection of carbamazepine but not that of phenobarbitone. In experiments with sub-anticonvulsant doses of phenobarbitone (20mg/kg) and carbamazepine (10mg/kg) with sub-anticonvulsant doses of adenosine (500 mg/kg)/CPA (2 mg/kg), a better protection was seen with combination as compared to either drug alone. The results suggest that adenosinergic mechanisms may be involved in the anticonvulsant action of carbamazepine but not that of phenobarbitone. However, adenosine potentiators may be of potential use as adjuncts to the conventional antiepileptic drugs.

**F : IID : 110** HEMODYNAMIC RESPONSES TO HYPOXIA DURING ACUTE NORMOVOLEMIC HEMODILUTION

**ANITA TALWAR & MOHAMMAD FAHIM,**
DEPARTMENT OF PHYSIOLOGY, VALLABHBHAI PATEL CHEST INSTITUTE, UNIVERSITY OF DELHI.

Cats (n=20) anaesthetised with mixture of chloralose and urethane were exposed to hypoxic gas mixtures (12% O2, and 7% O2) at normal hematocrit (HCT) and then at graded levels of normovolemic hemodilution (HCT-24.0±2.0% and 13.0±1.5%). Muscle paralysis was induced with vecuronium (0.1mg/kg) to avoid reflex respiratory movements. Left ventricular pressure (LVP), arterial blood pressure (ABP), heart rate (HR), right atrial pressure (RAP) were recorded on polygraph. Cardiac output (CO) was measured using a cardiac output computer. Hemodilution produced significant increase in HR, CO and there was no change in ABP, RAP, LVDp/dt max and total peripheral resistance (TPR). Ventilation with hypoxic gas mixtures (12% O2, and 7% O2) did not produce any significant (P>0.05) effect of ABP, LVDp/dt max and RAP neither at control HCT nor after induction of acute normovolemic hemodilution. Ventilation with hypoxic gas mixture produced significant P<0.05 increase in HR and CO at control HCT. However, on induction of normovolemic hemodilution, hypoxic gas mixtures produced...
decrease in HR and CO. The reversal of response to hypoxia under conditions of acute normovolemic hemodilution could possibly due to higher resting values of HR and CO in hemodiluted condition or altered control under such conditions of severe stress.

SUREKHA DEVI, S. MOHARANA, D.N. MOHARANA & A. PANDA.

The term ARMD is used to describe a number of clinical conditions characterised by progressive deterioration of memory, intellect and behaviour associated with ageing process. The incidence is on the rise. 10-15% prevalence is found over the age of 65 and it is about 25 to 30% in the over 80 population.

No single explanation of ARMD is satisfactory despite extensive investigation, etiology remains poorly understood. Categorised into primary Degenerative disorders without vascular involvement (50-70%), cerebrovascular disease 10%, mixed forms 20-30%. The changes in the CNS performance and chemicals in the brain substance in the ageing process affect the morphology, neurophysiology, neurochemistry and receptor concentration. The histopathological alterations are neurofibrillary tangles. Neuritic plaques are more prominent in the frontal and temporal cortex and hippocampus. The acetylcholine containing neurones are more affected.

Four categories of cerebroactive B, C, D were selected. Out of the 14 cases of ARMD 2 each received codergocrine, Piracetam, Cyclandelate, Pentoxyphyline, Ginko-biloba, Ginseng and Flunnarizine for a period of six weeks.

Following six weeks of therapy of effective doses there was no appreciable improvement in the symptomatology of ARMD except in the pair receiving codergocrine.

We conclude that Codergocrine is the only available Pharmacological armamentarium in ARMD.

RAMESH BHAT M. RAMASWAMY C, KASTURBA MEDICAL COLLEGE, MANGALORE.

Anthropometric measurements were taken in healthy Medical students (18-20 yrs), (116 males and 100 females). Their BMI, BSA, Broca's Index and W/H ratio were calculated. Using Futurex 5000 which operates on infra-red absorption technique, the total body fat %, Lean body mass, Total body water and regional distribution of fat were determined.

All the subjects were found to be non-obese as per the BMI (<25) and under weight as per the Broca's Index, which indicates the ideal weight. The subjects were further divided into 3 groups as per the total body fat % as Good (Males upto 18%, females upto 25%), Poor (Males 18-23%, females 25-30%) and Very poor (Males > 23% and females > 30%). The weight, BSA & BMI showed a significant progressive decrease (P<0.001) whereas height and Broca's Index showed a significant increase in Good group when compared to Poor and Very Poor groups. Thigh region showed a higher fat distribution than abdomen and gluteal regions in both the sexes.

In conclusion, this study indicates that even in non-obese adolescents the tendency towards obesity can be predicted and also the region of greater fat distribution can be located by this direct method.

S. K. TONGIA.
DEPARTMENT OF PHARMACOLOGY, M.C.M. MEDICAL COLLEGE, INDORE-452001 (M.P)

A literary experimental attempt is made to systemetically arrange in a Tabulated - form, a wide varieties of documented medicines which have a potential to alter the blood sugar level by diverse mechanisms.
The letters of the theme "PRECAUTIONARY MEDICINES IN DIABETES MELLITUS", provide hint towards initial letters of various medicines (about 40 medicines) which exert blood sugar modifying effect. The dose of antidiabetic drugs have to be modified if used with the above drugs concurrently.

The format is usable as a ready reckoner and mnemonic by medical practitioners in diverse disciplines. The mechanisms of alteration in the blood sugar level are briefly commented for each and every medicine in the table format.

F : IID : 114 ELECTRODIAGNOSIS OF MYASTHANIA GRAVIS-CASE REPORT

NEELIMA BHANDARKAVATHEKAR, PADMAKAR M. KULKARNI,
LECTURER (PRESENTING AUTHOR), ASSOCIATE PROFESSOR, DR. V.M. MEDICAL COLLEGE, SOLAPUR, MAHARASHTRA

A twenty years old male presented with bilateral ptosis, muscular weakness and respiratory insufficiency. This patient was subjected to electrophysiological study in the form of repetitive nerve stimulation of ulnar nerve, median nerve and brachial plexus. Compound Muscle Action Potentials (CMAP) were recorded from thenar, hypothenar and deltoid muscles. It was found that there was 10-15% decrement in the amplitude of compound muscle action potentials between third to fifth response, which diagnosed myasthania gravis in this patient.

Injection of edrophonium showed improvement in amplitude of CMAP, vital capacity as well as the symptoms of ptosis and weakness. Pathology of this disease is presence of antibodies against actyl choline receptors at the neuromuscular junction.

Key wards - CMAP, Myasthania gravis.

F : IID : 115 MICRONUTRIENTS AND CELL MEDIATED IMMUNE RESPONSE

J.R. PATNAIK, B.K. PATNAIK AND PRANATI NANDA

It is presumed that the patient's immune capacity influences the mode of evolution, prognosis and recurrence of malignant diseases. Micronutrients play an important role for body immune response and to counteract the free radicals. Direct quantitation of 'T' cells appears particularly relevant, since this population of lymphocytes play important role in tumor immunity.

In this study 80 identical cancer patients have been observed, 40 each from 2 common cancers like oral cavity and breast. These patients have undergone surgery. They have been divided into two groups 20 in each category as control group and dietary scheduled group. The control group are those who would not receive specific micronutrients in addition to their normal diet. The other group receives specific micronutrients in specific doses in addition to their normal diet.

At the beginning of the study and at the end of 3 months, the total peripheral lymphocytes and 'T' lymphocyte counts are measured in all cases of both the groups. It is observed that there is significant increase in the total peripheral lymphocyte count and 'T' lymphocyte count and thereby the body immunity in the dietary schedule group.

F : IID : 116 LOCAL ANESTHETICS AND CALCIUM CHANNEL ANTAGONISTS INDUCED CHANGES IN THE ELECTRICAL ACTIVITY OF RAT ATRIA

MALOY BIKASH MANDAL,
DEPARTMENT OF PHYSIOLOGY, INSTITUTE OF MEDICAL SCIENCES BANARAS HINDU UNIVERSITY, VARANASI-221005, U.P., INDIA.

Studies have indicated that both the calcium antagonists and local anesthetics have depressive effect on myocardium. Further experiments have shown that concomitant administration of these drugs potentiates their depressive effects. However, the effect of these drugs on the atrial electrical activity is not clear. In the present investigation, atrial electrical activity was assessed by recording the ECG ('p' wave) after intravenous administration of local anesthetics (Lignocaine 100-500 μg/kg, Bupivacaine 20-100 μg/kg) and calcium antagonists (Verapamil and Diltiazem 20-100 μg each) in one group of anesthetized albino rats. In another group of rats, the spontaneous atrial potentials were recorded from isolated right atrium placed in the 50 ml organ bath.
COMPARATIVE INTERACTION OF ESTRONE (E1), ESTRADIOL (E2) AND PROGESTERONE (P) WITH RECEPTORS IN HUMAN ENDOMETRIA UNDER VARIOUS PATHOLOGICAL CONDITIONS

VIJ URMILA, KINRA, G. & BUCKSHEE, K., DEPARTMENTS OF REPRODUCTIVE BIOLOGY AND OBSTETRICS AND GYNAECOLOGY, ALL INDIA INSTITUTE OF MEDICAL SCIENCES, NEW DELHI-110 029

Specific binding of tritium labelled E1, E2 and P to receptors (R) was investigated in 20 E carcinoma, 30 E hyperplasia and 25 E from fibroid uterus, cervical carcinoma and dysfunctional uterine bleeding cases. The range of receptor population for these three ligands varied considerably in E carcinoma however, E2 R were considerably more than E1 R. Hyperplastic E and E of fibroid uterus had higher number of R for E1, E2 and P when compared with normal E from any day of the menstrual cycle. Throughout the normal menstrual cycle, the R levels showed changes in relation with the circulating endogenous hormone concentration. Interaction of antihormones studied by relative binding affinity assays revealed comparable values for normal and carcinoma E where RU 486 showed high competition for PR more than P per se while RU 486 did not compete for E1 and E2 binding. Any alterations in the E1, E2 R profile and the presence of high PR in the E carcinoma may be of predictive value to decide the type of hormone therapy to be administered to the patients.

INSULIN SECRETORY CHARACTERISTICS OF CULTURED MONKEY PANCREATIC ISLETS:

A.N. BALAMURUGAN & S. GUNASEKARAN, DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, VELLORE

The islets of Langerhans were isolated from bonnet monkey pancreas by the collagenase digestion method. The islets were cultured at 37°C for seven days in a humidified atmosphere of 5% carbondioxide and 95% air. The culture medium used was RPMI-1640 supplemented with 10% fetal calf serum. The culture medium was changed every two days. After seven days of culture period, some islets were processed for light microscopic study. Histologically the cultured islets were intact and maintained their structural integrity. The remaining cultured islets were incubated in low and high concentrations of glucose or leucine for one hour. The amounts of insulin secreted by these islets were estimated by radio immuno assay. There was a nine fold increase in the insulin secretion when the islets were incubated with higher glucose concentration when compared with lower glucose concentration. In the case of leucine, there was a three fold increase of insulin secretion when the islets were incubated in the higher leucine concentration. The insulin secretory characteristics of these cultured islets were similar to those of fresh uncultured islets. From this study it was concluded that culturing of monkey islets for seven days did not alter the insulin secretory characteristics.

ENTORHINAL CORTEX LESIONING PROTECTS HIPPOCAMPAL CA3 NEURONS FROM STRESS INDUCED DAMAGE.

SUNANDA & T.R. RAJU, DEPARTMENT OF NEUROPHYSIOLOGY, NATIONAL INSTITUTE OF MENTAL HEALTH & NEUROSCIENCES, BANGALORE

The excitatory glutamatergic innervation seems to determine nerve cell's vulnerability to chronic stress. Interruption of the excitatory afferents to the hippocampus by removal of the entorhinal cortex prior to the
Induction of stress allows examination of this hypothesis. In the present study, the role of entorhinal cortex in stress induced damage in terms of dendritic branching points and intersections has been investigated. 45 day old male Wistar rats were taken and divided into four groups, namely, (a) Normal control (b) Stressed (c) Lesioned but not subjected to stress (d) Lesioned and subjected to stress. Entorhinal cortex were lesioned electrolytically in c and d group of animals bilaterally. Following entorhinotomy, the rats of b and d groups were subjected to chronic restrained stress, 6 hours per day for 21 days. A total of 320 pyramidal neurons stained by rapid Golgi technique were examined. The dendritic branching points and intersections were quantified up to 200 and 120um radial distance in apical and basal dendrites respectively. Results revealed that there was a significant (p<0.001) reduction in the number of dendritic branching points and intersections in stressed rats compared to control. Interestingly, the lesioning of entorhinal cortex prior to the stress significantly (P<0.005) reduced the atrophy of both apical and basal dendrites. The present study suggests that chronic restraint stress results in the dendritic atrophy of CA3 neurons probably due to a glutamate based excitotoxic mechanisms and this can be prevented to a large extent by the removal of entorhinal cortex, which may be due to the reduction of glutamatergic transmission to the hippocampus.

F : IID : 120 A STUDY OF EFFECT OF YOGA PRACTICE ON PULMONARY FUNCTION TESTS IN YOUNG FEMALES OF LUCKNOW CITY

DEPARTMENT OF PHYSIOLOGY, K.G'S MEDICAL COLLEGE, LUCKNOW.

During recent years, a lot of research work has been done to show the beneficial effects of Yoga training. The present study was undertaken to show the effect of yoga practice on some parameters of pulmonary function tests. Sixty healthy young female subjects (Age group 17-28 years) were selected from a yoga centre of Lucknow City. They had to do the yoga practice daily for 45 minutes to 1 hour. The observations were recorded by MEDSPIOR, a computerised machine, in the form of FVC (Forced vital capacity), FEVI (Forced expiratory volume in 1 second) and PEFR (Peak expiratory flow rate) at day-1, after 6 weeks and 12 weeks of their practices. The day-1, means the very first day of yoga centre. The results were statistically analysed and it was found that there was significant increased value of FVC, FEVI & PEFR at the end of 12 weeks.

F : IID : 121 ISOLATION AND CHARACTERISATION OF AN ANTIMICROBIAL AGENT FROM THE SKIN OF INDIAN TIGER FROG (RANA TIGRINA)

V. GUPTA, U.S. PANDEY S.S. SINGH, M.K. MISRA
DEPARTMENT OF PHYSIOLOGY, K.G'S MEDICAL COLLEGE, LUCKNOW (INDIA), DEPARTMENT OF BIOCHEMISTRY, LUCKNOW UNIVERSITY, LUCKNOW (INDIA).

Frogs are known to be largely immune to microbial infections despite their microbe infested dwellings. This prompted us to study defence systems operative in tissues that have greater exposure to the surroundings such as skin, viscera and lungs.

During investigations a powerful antibacterial small molecular weight polypeptide has been isolated, partially purified and its antibacterial and bactericidal properties have been studied. The polypeptide has none or very few tyrosine, tryptophan and phenyl alanine residues, and effective against gram positive and gram negative pathogenic and non pathogenic bacteria.

F : IID : 122 "EFFECT OF TAMOXIFEN ON THE MOTILITY OF RAT VAS DEFERENS"

EMMANUEL SUBASH Y, SIKANDER HUSSAIN & BILQUIS M.A. RASHEED,
DEPARTMENT OF PHYSIOLOGY, DECCAN COLLEGE OF MEDICAL SCIENCES, KANCHANBAGH, HYDERABAD INDIA.

Tamoxifen, is an anti-oestrogenic agent used in the palliative treatment of Tumors, containing the estrogen receptor.

There are reports for the use of the drug in the treatment of male infertility and the sperm count, but there is no study reporting the effect of the drug on the contractility of the vas deferens. Our study was to find
out the effect of Tamoxifen on the Electrogenic response of Vas Deferens incubated in a Dales Organ bath containing the Tyrode Solution at 37°C. The results show that there was inhibition of response with Tamoxifen and this inhibition was not abolished with immediate subsequent incubation with Nor-Epinephrine. The mechanism of action may be through blockage of the Calcium Channels.

Key Words:
- Tamoxifen, Antioestrogen, Male fertility, Vas Deferens, Electrogenic Stimulation, Nor-Epinephrine, Ca2+ - Channels.

F : IID : 123 THE STATUS OF SPERM CONCENTRATION IN RURAL WARDHA - A RETROSPECTIVE ANALYSIS OF SEMEN IN NORMOSPERMIC MEN VISITING REPRODUCTIVE BIOLOGY UNIT, MGIMS, SEWAGRAM.

RAMJI SINGH, A.R. CHAUDHARY, S. BHUNIA

The controversy over sperm count deterioration has been the current topic of discussion. Irvine et al (1996) have demonstrated 2% decrease in sperm count per year over 11 years in men born between 1951 and 1973 in Britain. Another study by Bhujan et al (1996) comprising a data of 16 years does not show any significant change.

We analysed data available in Reproductive Biology Unit, Department of Physiology, Mahatma Gandhi Institute of Medical Sciences, Sewagram which shows no decrease in sperm concentration. The persons visiting our lab are mainly from rural areas. Thus it seems that multiple environmental factors are responsible for deriorating semen concentration.

F : IVD : 124 TRIDAX PROCCUMBENS LEAF JUICE EXERTS NASAID LIKE ANALGESIC ACTIVITY

PATIL B.V., KADLIMATTI S.H., KULKARNI D.R.,
DEPARTMENT OF PHARMACOLOGY, B.L.D.E.A.'S SHRI B.M. PATIL MEDICAL COLLEGE, BIJAPUR-586103, KARNATAKA

Fresh leaf juice of tridax proccumbens (TPLJ) reported to possess prohealing, clotting promoting and anti-inflammatory activity, was tested for analgesic activity by employing writhing test in mice and rat tail flick method.

Pre-screened albino mice (25-30G) received P.O. either saline (2ml/kg) TPLJ autoclaved fraction (TPLJ-A), TPLJ non-autoclaved (TPLJ-N) both 2 ml/kg or 80 mg/kg of Ibuprofen. An hour after drug administration writhing movements were induced by I.P. Inj. of 0.3 ml of 0.6 % acetic acid, number of writhing movements for 20 were recorded for each group of mice (n=6-8). Pre-screened wistar rats (150-200G) received P.O. either saline, TPLJ-A TPLJ-N All 2 ml/kg) or Ibuprofen 54ml/kg. An hour after treatment animals were subjected for radiant heat in an analgesiometer. Reaction time (Tail-flick time) was noted for rats in each group (n=6-8). Cut of time was 15".

Mice test showed that Ibuprofen, TPLJ-A and TPLJ-N reduced number of writhing movements respectively to 8.5±3.5, 20.3±4.49, 22±2.9 from control value 64±2.8 per 20. Thus both fraction of TPLJ had almost identical and significant (P<0.001) analgesic action which was of lower potency than Ibuprofen (percent protection 84 and 66 for Ibuprofen and TPLJ fractions respectively). Rat tail flick test showed that TPLJ had mild analgesic action by raising reaction time by 26% only. Thus TPLJ autoclaved or non-autoclaved has ibuprofen (NSAID) like analgesic action.

F : IVD : 125 MECHANISM OF ACTION OF MAGNESIUM SULPHATE ON MOUSE COLON

PRAKASA RAO J. STANLEY MANGALAKUMAR ROBERT F AND
DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, VELORE. * PRESENTING MEMBER.

Recently it has been shown that purgative effect of magnesium sulphate is mediated through liberation of nitric oxide. In an attempt to verify this, the effect of magnesium sulphate on mouse colon was evaluated
after various pretreatments. Intracaecal injection of the drugs into mice fitted with cannulae as described by Yagi, allowed direct access to the colonic region. Profuse diarrhoea was induced by injection of magnesium sulphate. Prior treatments with indomethacin, methylene blue or 5-aminosalicylic acid were unable to curtail the response to magnesium sulphate. However anthracene -g-carboxylic acid was able to significantly reduce the diarrhoeogenic response of Magnesium Sulphate. The results indicate that nitric oxide may not be involved in the action of magnesium sulphate on colon.

**F : IVD : 126 COMPARISON OF THE EFFECTS OF CYCLOSPORINE AND PEG-35 (CREMOPHOR OIL) ON GLUCOSE TOLERANCE AND INSULIN SECRETION IN INDIAN BONNET MONKEYS**

**SATHYA SUBRAMANI, S. GUNASEKHARAN, A. BALAMURUGAN, S. SAVITHIRI,**
**DEPARTMENT OF PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, VELLORE. PRESENTING MEMBER.**

We compared the effects of cyclosporine and polyethylene glycol (PEG-35, or cremophor oil, the vehicle for cyclosporine) on glucose disposal and insulin secretion in Indian bonnet monkeys (Macaca radiata radiata). Four monkeys were studied. Two animals received cyclosporine injections, the dose being in the therapeutic range, while two others received comparable doses of PEG-35 for a month. Four Intravenous glucose tolerance tests (IVGTT) were performed on each animal as follows: the first, before beginning treatment, the second and third on the 14th and 28th days of treatment and the fourth, one month after stopping treatment. The results show that glucose tolerance and insulin secretion were impaired during treatment in both cyclosporine and PEG-35 groups. They approached normalcy one month after stopping treatment. The histology of islets taken from a cyclosporine treated animal and a vehicle treated animal, 2 months after treatment, was normal. The derangement was therefore functional and temporary. The similarity of results in both groups suggests that PEG-35 may have a role in cyclosporine induced diabetes mellitus.

**F : IVD : 127 INFLUENCE OF ELEVATED GLUCOSE ON RELAXANT RESPONSES IN MONKEY AORTIC STRIPS**

**SAVITHIRI S. KURUVILLA A & GU NASEKARAN S,**
**DEPARTMENTS OF PHARMACOLOGY & PHYSIOLOGY, CHRISTIAN MEDICAL COLLEGE, VELLORE.**

Acetylcholine causes relaxation in isolated aortic strips with intact endothelial cells while it causes contraction in aortic strips with damaged endothelial cells. Sodium nitroprusside was found to cause relaxation in monkey aortic strips both with damaged and intact endothelium. The relaxant responses to acetylcholine and sodium nitroprusside in control (5.5mM) and high glucose (44mM) concentration were observed. Endothelium-dependent relaxation to acetylcholine was decreased significantly in the presence of 44mM glucose. In preparations without endothelium, the contraction caused by acetylcholine was increased in the presence of 44mM glucose. Direct smooth muscle relaxation to sodium nitroprusside was decreased in strips with damaged endothelium on exposure to high glucose.

**FIUD : 128 USE OF SERUM ACETYLCHOLINESTERASE LEVELS IN DIFFERENTIATING THE PATIENTS OF SCHIZOPHRENIA FROM THE PATIENTS OF MENINGITIS - A PILOT STUDY**

**K. N. DAVE, B.N. DAVE, F.R. BILLIMORIA**

Serum Acetylcholinesterase levels were estimated in 10 male patients of Schizophrenia and 12 controls. Serum Acetylcholinesterase levels in patients of Tuberculous, Pyogenic meningitis and controls were also studied. It was found that there is increase in serum Acetylcholinesterase levels in patients of Meningitis while no such elevation is seen in patients of Schizophrenia. Thus serum Acetylcholinesterase levels can be used to differentiate patients of Schizophrenia from the patients of Meningitis when these patients present with Atypical Clinical Features.
F : IVD : 129 SOMATOSENSORY AND PAIN P300 IN RESPONSE TO DIFFERENT STRENGTH OF STIMULI IN NORMAL ADULTS.

KUMAR S, MATHUR R AND NAYAR U,

Recently Pain Evoked Potentials (EPs) have been used as means of obtaining objective measures, in clinical and experimental set-up. We measured the P300 Event Related EPs from the five scalp sites in 9 male healthy subjects. The task involved was standard P300 paradigm consisting of target (20%) and non-target (80%) stimuli. Different strengths of stimuli ranging from non-painful to painful were applied to the left index and middle fingers. The evoked responses were stored and analysed by Nihon Kohden (Neuropack-8) EPs recorder. Latency, amplitude, inter-peak amplitude and area under the different component waveforms were measured. P300 latency, P300 area and Reaction Time showed definite trends with increasing strengths of stimuli. With increasing strength of stimuli P300 area and reaction time showed definite trends with increasing strengths of stimuli. With increasing strength of stimuli P300 latency (msecs.) was 486±65, 466±45, 453±54, 421±15, P300 area (mVs2) was 3.26±0.45, 3.44±1.23, 6.14±39, 8.39±3.9 and Reaction Time (msecs.) was 495±54.3, 462±100.8, 437±71.03, 371±54.4 (all from PzA+site). These findings suggest that P300 does correlate with pain processing.

F : IVD : 130 P300 AS A ELECTROPHYSIOLOGICAL MARKER OF DEMENTIA

SANJEEV JHA,
ASSISTANT PROFESSOR, NEUROLOGY, SGPGIMS, LUCKNOW, UP, INDIA.

Dementia is an acquired syndrome of persistent global decline in mentation. Numerous psychological test batteries are available to document it clinically but they have a limitation of being purely subjective and are non quantitative; the probability of adaptability is also there. P300 is an evoked potential occurring in response to a task relevant stimulus which is generated by cerebral cortex. The aim of this study was to observe changes in P300 potential in various types of dementia, 73 conscious and cooperative patients suffering from evident dementia of which 12 were alcoholic, 22 of multi-infarct state, 9 degenerative and 20 senile dementia were subjects, 10 healthy young volunteers were control. After a clinical documentation of dementia using standard tests, P300 was elicited on a Neuropack IV model using Auditory tones with odd ball paradigm. There was significant change in P300 wave potential in the form of increased latency and poor reproducibility, in demented patients, as compared to control. Aetiology and duration of dementia had no correlation with the P300 wave. We presume that P300 can be used as an electrophysiological marker of dementia.