

LETTER TO THE EDITOR

BRONCHODILATOR AND ANTI-INFLAMMATORY EFFECT OF GLYCOSIDAL FRACTION OF *ACACIA FARNESIANA*

Sir,

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The anti-infective, anti-inflammatory, stimulant and carminative actions of the decoction of bark, tender leaves and pods of *Acacia farnesiana* are enlisted (2,3). The essential oil obtained from the unripe pods was found to have prolonged hypotensive action in dogs (6). This report describes smooth muscle relaxant and anti-inflammatory effect of glycosidal fraction obtained from unripe pods of the plant.

Unripe pods of *Acacia farnesiana* collected during February were dried at room temperature. The glycosidal fraction of ethyl alcohol extract of coarsely powdered pods (150 g) was isolated (4). The yield of the glycosidal fraction was 400 mg (yield, 0.26%). The aqueous solution of the glycosidal fraction was studied on perfused isolated guinea pig lung (5) for bronchodilator effect, *per se* and against histamine induced spasm. For vasodilator effect hind limb of dogs was perfused through femoral artery with oxygenated defibrinated blood in Ringar solution. The femoral venous outflow was periodically recorded. Anti-inflammatory effect of the extract was tested in carrageenin pedal oedema test model (7) for acute effect and in formaldehyde arthritis model (1) for long term effect. For acute effect the drug was injected (ip) in dose of 100 μ g/100 g 3 hr before inducing inflammation, and for long term effect, 100 μ g/kg (ip) daily for 15 days. The control groups were treated with normal saline.

The glycosidal fraction of *Acacia farnesiana* in doses of 2, 5 and 10 μ g increased outflow in isolated guinea pigs lungs (Table I). It also increased the outflow after histamine (10 μ g) induced contraction in the same doses and propranolol (400 μ g) failed to block the bronchodilator effect. This suggests that the glycosidal fraction exerted a direct relaxant action on bronchial muscles.

It showed vasodilator action in limb perfusion of dog in doses of 2,5 and 10 μ g (% increase in blood flow/min, 21.40, 20.86 and 24.3, n=5). However, chlorphenaramine maleate (20 μ g), atropine (20 μ g) and propranolol (400 μ g) failed to block the vasodilator effect of the glycosidai fraction. The glycosidal fraction inhibited the carragenin and formaldehyde induced inflammation (% inhibition 38.2 and 26.26, P<0.001, n=10).

TABLE I : The effects of glycosidal fraction of *Acacia farnesiana* on guinea pig's isolated lung perfusion.

| S. No. | Drug treatment | Doses of glycosidal fraction in μg | Mean outflow \pm S.E.M. | |
|--------|---|--|---------------------------|--------------------|
| | | | Before | After |
| 1. | Nil (Control) | 2 | 8.5 \pm 0.41 | 10.5 \pm 0.43** |
| | | 5 | 8.32 \pm 0.316 | 10.4 \pm 0.46** |
| | | 10 | 9.32 \pm 0.48 | 12.5 \pm 0.46** |
| 2. | Histamine (10 $\mu\text{g}/\text{ml}$) | 2 | 4.22 \pm 0.18 | 6.28 \pm 0.02** |
| | | 5 | 3.96 \pm 0.114 | 6.36 \pm 0.27** |
| | | 10 | 3.66 \pm 0.288 | 6.9 \pm 0.14 |
| | Propranolol (400 $\mu\text{g}/\text{ml}$) | 2 | 10.2 \pm 0.2 | 12.22 \pm 0.26* |
| | | 5 | 9.44 \pm 0.14 | 11.56 \pm 0.107* |
| | | | 10.02 \pm 0.21 | 13.12 \pm 0.2** |

N = 10

P = * < 0.05

** < 0.001

The results indicated that the glycosidal fraction has a smooth muscle relaxant effect and a promising anti-inflammatory effect. The former is not mediated through β -adrenergic receptors (lung experiment) or through cholinergic or H_1 -receptor (hind limb perfusion). The effect needs to be characterised further.

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REFERENCES

1. Brownlee, G. Effect of deoxycortisone and ascorbic acid on formaldehyde induced arthritis in normal and adrenalectomised rats. *Lancet*, 258 : 157-159 1950.
2. Kirtikar, K.R. and B.D. Basu. *Indian Medicinal Plants*, II, 2 L.M. Basu, Allahbad, p. 920, 1933.
3. Nadkarni, A.K. *Indian Materia Medica*. Ed. III. Vol. I, Popular Book Depot, Bombay, p. 394, 1954.
4. Paech, K. and M.V. Tracey. *Modern Methods of Plant Analysis*, Vol. 2, Springer-Verlag. Berlin p. 298, 1979.
5. Sollmann, T. and P.T. Hanslik. *An Introduction to Experimental Pharmacology*, W.B. Saunders Company, London, p. 158-155, 1928.
6. Trivedi, C.P. N.T. Modi and B.G. Chavan. Preliminary pharmacological studies of essential oil of *Acacia farnesiana* (Gandh Banul). *Ind. J. Pharmac.*, 10 (1) : 89, 1978.
7. Winter C.A., E.A. Risely, E.A. Risely and G.W. Nuss. Carr^ogeenin-induced oedema in hind paw of rat as an assay for anti-inflammatory drugs. *Proc. Soc. Exp. Biol. Med.*, III 544-547, 1962.