EFFECT OF ASCORBIC ACID ON TOTAL AND HIGH DENSITY LIPOPROTEIN CHOLESTEROL OF PLASMA IN NORMAL HUMAN SUBJECTS

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Summary: Ascorbic acid, 30 mg/kg/day, fed for 20 days did not significantly change either total cholesterol or high density lipoprotein cholesterol of plasma of 27 male medical college students of ages varying between 17 and 20 years.

Key words: ascorbic acid total cholesterol lipoprotein cholesterol

INTRODUCTION

High total cholesterol and low high density lipoprotein cholesterol (HDL cholesterol) are major factors predisposing atherosclerosis (1, 3, 4, 6, 7, 8, 10). Ascorbic acid potentiates hypocholesteremic effect of clofibrate and lowers cholesterol level in scorbutic guinea pigs (9). The effect of administration of ascorbic acid in large doses on plasma total cholesterol and HDL cholesterol was, therefore, studied.

MATERIALS AND METHODS

Twentyseven healthy male medical students aged between 17 and 20 years were selected. Plasma cholesterol and high density lipoprotein cholesterol were determined before and after feeding ascorbic acid 30 mg/kg/day, for 20 days. Cholesterol was determined by method described by Kim (5). HDL cholesterol was separated by Burstner's method (2). Misra et al. (8) estimated cholesterol and HDL cholesterol in serum and plasma and found that there was no quantitative difference. Hence in this study plasma was used for determination of cholesterol and HDL cholesterol. Fasting blood samples were collected in EDTA Bulbs (1 mg EDTA/ml of blood) and plasma was separated by centrifugation.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>30 mg/kg/day</th>
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<tbody>
<tr>
<td>Plasma total cholesterol</td>
<td>mg %</td>
</tr>
<tr>
<td>HDL cholesterol</td>
<td>mg %</td>
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</tbody>
</table>

Results show that ascorbic acid neither significantly alters the total cholesterol, HDL cholesterol (Table I).

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RESULTS

Results show that ascorbic acid given in large dose to normal persons does not alter total cholesterol, HDL cholesterol or the ratio of HDL cholesterol to total cholesterol (Table 1).

(Weights of the individuals under study did not change during the period of study).

TABLE 1: Plasma cholesterol and HDL cholesterol before and after feeding ascorbic acid, 30 mg/kg/day, for 20 days. n=27

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before ascorbic acid</th>
<th>After feeding ascorbic acid</th>
<th>t value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plasma total cholesterol mg %</td>
<td>163±27</td>
<td>186±32</td>
<td>0.2139</td>
<td>Not significant (P &gt; 0.05)</td>
</tr>
<tr>
<td>HDL cholesterol mg%</td>
<td>68±15</td>
<td>66±19</td>
<td>0.00867</td>
<td>Not significant (P &gt; 0.05)</td>
</tr>
</tbody>
</table>

DISCUSSION

High total cholesterol level has been linked with atherosclerosis for a long time. However, it has been now reported that low HDL cholesterol and low HDL/total cholesterol ratio is more important predisposing factor than total cholesterol for atherosclerosis, and therefore is considered a major risk factor in producing thrombotic disorders. (3, 4, 6, 7, 8, 10). Ascorbic acid was shown to lower cholesterol in scorbutic guinea pigs. Such studies are not reported in human beings. This study however, indicates that ascorbic acid, per se has no effect on total cholesterol and HDL cholesterol in normal young persons.

ACKNOWLEDGEMENTS

We are very much thankful to Professor Dr. N.A. Dabholkar, L.T.M. Medical College, Sion, Bombay-400 022 for allowing us to do this research work.
REFERENCES


ABNORMAL CARDIOVASCULAR AND CARDIAC GLYCOSIDES

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Summary: Cardiovascular and cardiac glycose effects of scorpion stings (5, 10). The catecholamines released from Buthus tamulus, a common scorpion, upon percutaneous injection at a dose of 5-10 mg/kg body weight. So, these animals treated with a venom dose, showed myocardial hypoxia was the significant reduction in the atrial with a higher venom dose. The catecholamine levels were found in urine (5) as indicated in Table 1 and 2. Various cardiovascular and cardiac glycose effects of scorpion stings (5, 10). The catecholamines released from Buthus tamulus, a common scorpion, upon percutaneous injection at a dose of 5-10 mg/kg body weight. So, these animals treated with a venom dose, showed myocardial hypoxia was the significant reduction in the atrial with a higher venom dose. The catecholamine levels were found in urine (5) as indicated in Table 1 and 2.

Earlier reports indicate that it disappears rapidly from the circulation, and the levels of the catecholamines have been found to be below detectable levels. However, the results obtained in these experiments showed that the catecholamines remained in the circulation longer than expected. The catecholamines released from Buthus tamulus, a common scorpion, upon percutaneous injection at a dose of 5-10 mg/kg body weight. So, these animals treated with a venom dose, showed myocardial hypoxia was the significant reduction in the atrial with a higher venom dose. The catecholamine levels were found in urine (5) as indicated in Table 1 and 2.

It would then be logical to assume that the catecholamines could be responsible for the observed cardiac glycose effects.