COMMUNICATION

Effect of Myoinositol on Skin Cholesterol Levels in Rats Maintained on a Low Protein, Myoinositol Deficient Diet

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For some time past we have been interested in the effect of myoinositol on cholesterol metabolism in rats (1–3). All these studies were made under experimental conditions designed at this laboratory, which are suitable to investigate myoinositol deficiency and supplementation. Under such conditions, it has been shown that myoinositol promotes the recovery of delayed transport of hepatogenic cholesterol in rats fed on a myoinositol deficient, low protein diet, through the bloodstream to adipose tissue. In connection with this fact, it was thought interesting to examine the change in skin cholesterol levels in such animals.

Male albino rats of Wistar strain weighing about 100 g were used in this experiment. Animals were housed in individual wire-bottomed cages, in a room maintained at 23°C. The animals were placed on a low protein diet described by Handler (4) as reported previously (1) throughout the experimental period of 4 weeks. After 3 weeks of depletion the animals were divided into two groups. One received vitamin B complex with myoinositol and the other that without myoinositol through subcutaneous injection daily. The addition of myoinositol was 30 mg per rat per day. The treatment was continued for one week. The animals were sacrificed by exsanguination, under ether anaesthesia, through the carotids.

Skin was collected from the medio-ventral aspect just posterior to the xiphoid process of sternum measuring about 3.5 cm². The skin pieces were immediately placed in air-tight containers and frozen at −20°C and taken for analysis within 2–3 weeks after collection.

The skin was dehaired and the fascia scraped off before being digested in 2N alcoholic KOH. The digests were diluted with 1 ml of distilled water and suitable aliquots were taken for protein estimation (5) and cholesterol extraction (2). The amount of cholesterol was estimated according to Zlatkis et al. (6).

The results are presented in Table 1. As can be seen, myoinositol brings about an increase in the low levels of skin cholesterol of animals fed on the low protein, myoinositol deficient diet. The increase amounts to more than 30%.

It is known that main site of cholesterol synthesis is the liver and that the skin is also

<table>
<thead>
<tr>
<th>Animal group</th>
<th>Myoinositol treatment</th>
<th>Cholesterol μg/mg skin protein</th>
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<tr>
<td>1</td>
<td>−</td>
<td>34.5</td>
</tr>
<tr>
<td>2</td>
<td>+</td>
<td>46.2</td>
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Values are mathematical means of 5 experimental data.

1 Syed H. Hasan, 西垣郁雄, 八木国夫.
capable of synthesizing cholesterol. The major portion of skin cholesterol seems to be derived from sebaceous gland. Assuming that the cholesterol found in the skin of rat administered with myoinositol is mainly hepatogenic, the effect of myoinositol can be attributed to the lipotropic action of this cyclitol. However, some effect of myoinositol on the synthesis and secretion of cholesterol in situ can not be ruled out. These problems should be solved, for which experiments using isotope technique including radioautography are in progress.

REFERENCES