The Preventive Effect of a S-Methyl Methionine Sulfonium Compound on Dietary Hypercholesteremia.

Sir:

Methionine, recently, has been marked as not only a lipotropic substance but also as an agent, which adjusts the level of serum cholesterol, and further, from the etiological point of view that hypercholesteremia is one of the representative symptoms of the disturbance of one-carbon fragment metabolism, resulting from the deficiency of active methyl compounds. S-Methyl methionine sulfonium may participate in transmethylation, and thus, it shall be anticipated for having a preventing effect against hypercholesteremia. In this communication, we wish to call attention on this preventing effect of S-methyl methionine sulfonium iodide (MMSI) on experimental hypercholesteremia of rats, fed on a cholesterol enriched diet.

Twenty-three young and male albino rats of the Wistar strain, weighing 83.2±5.9g (Group I-III, 14 animals) and 104.4±4.2g (Group IV & V, 9 animals) were divided into 5 groups and fed on the test diet, consisting mainly of barley flour, defatted fish meal and refined lard, containing 1% of cholesterol, ad libitum, except for Group I.

MMSI was injected intraperitoneally to the test groups (Group III & V) at a level of 20mg per animal on alternate days throughout the experimental periods.

As control groups II and IV were injected with an equal volume of physiological saline or an equivalent iodine ion to MMSI, respectively. Group I was free from injection and cholesterol feeding.

MMSI was synthesized from DL-methionine and methyl iodide.

The determination of serum cholesterol was carried out as described by Bennie et al., and that of cholesterol in the liver performed after the procedure of Gungbaum et al. Total lipid in the liver was estimated as an ether-soluble matter and the unsaponifiable matter was determined as the residual fraction of the lipid, by treatment with 30% potassium hydroxide.

The results are shown in the Table below.

<table>
<thead>
<tr>
<th>Group No.</th>
<th>No. of rats</th>
<th>Weeks fed</th>
<th>Ch in diet (%)</th>
<th>Injected Ch in serum (mg/dl)</th>
<th>Ch in liver (mg/dl)</th>
<th>Lipid in liver (mg/dl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>4</td>
<td>5</td>
<td>0</td>
<td>None</td>
<td>233±21</td>
<td>9.08±2.29</td>
</tr>
<tr>
<td>II</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>NaCl</td>
<td>666±220</td>
<td>10.32±0.48</td>
</tr>
<tr>
<td>III</td>
<td>5</td>
<td>5</td>
<td>1</td>
<td>MMSI</td>
<td>716±151</td>
<td>9.86±1.03</td>
</tr>
<tr>
<td>IV</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>NaI</td>
<td>332±12</td>
<td>7.40±1.25</td>
</tr>
<tr>
<td>V</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>MMSI</td>
<td>344±83</td>
<td>8.64±0.78</td>
</tr>
</tbody>
</table>

Ch - Cholesterol.

---

this potentiality may be associated with methyl methionine sulfonium cation, but not with iodine anion.

The items measured, such as relative concentration of haemoglobin\(^5\), protein concentration in the sera, some clinical test on the final-day urinary excretion, and microscopic observations of the liver section in fat-staining, did not reveal any remarkable alternation in the animals tested.

Kikunoshin Nakamura
Hisashi Ariyama

Laboratory of Nutrition,
Faculty of Agriculture,
Tohoku University

Received June 1, 1959

---