Effect of Speman on Quality of Semen in Relation to Magnesium Concentration

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INTRODUCTION
The human sperm, the most active cell in the body, suspended in seminal plasma, represents the whole human being in miniature. Many authors have assigned a great role for the Mg** in activating various vital physiological functions in the body.

The drug Speman (The Himalaya Drug Co.) with its many important herbal ingredients is shown to possess androgenic and anabolic activity. It also improves the quality of semen by improving the functioning capacity of accessory glands, probably by virtue of its androgenic activity. But none of the authors has reported the action of Speman on the metabolism of Mg**, so vital a substance for various physiological functions, which is present in semen, and is reported to be secreted though not completely but to a great extent by prostate. Therefore, here we have endeavoured to know whether, (1) Speman improves the quality of semen in oligospermic persons, (2) If so, whether Speman has any influence on semen Mg** metabolism.

PATIENTS AND METHOD
Thirty oligospermic (McLeod's Scoring System) infertiles, in the age group of 24-46 years were studied over a period of 4 months. The semen samples were collected by standard method following standard precautions and 4 days' compulsory abstinence. A total of 86 samples were analysed as 2 cases could not be followed after first examination. The patients included were free from any pathology in their accessory glands, VDRL and KT -ve, and were free of any physical or mental infirmity. In all cases both testicles and vas on either side were found to be normal.

Half hour after collection, the samples were transferred to graduated tubes to measure the volume of semen/ejaculate in respective cases. The sample was examined for routine investigations like colour, odour, viscosity, pH. The sperm density by haemocytometer, the vitality at first hour by supravital staining (eosin – nigrosin staining) was done. All the physical findings like colour, odour, viscosity, sperm agglutination were found to be within normal limits.

Then the patients were divided in two groups just for convenience. (1) extremely oligospermic (with sperm density less than 10 million/ml) and (2) oligospermic (with sperm density 10 million/ml and above upto 30 million/ml). The Mg** was estimated colourimetrically by Neil and Neily method from protein free filtrate of the sample.

Then the patients were given the tablet Speman in a dose of 2 t.i.d. and the above noted investigations were carried out in the same way twice at 30 days interval.

OBSERVATIONS
On first examination all the patients were oligospermic with 10 patients having sperm density less than 10 million. The mean sperm density was 10.3 million/ml and the mean concentration value of Mg** was 4.5 mg/100 ml. On subsequent examination at 30 days and 60 days, the mean sperm density was found to increase to 24.45 million/ml and 30.6 million/ml respectively and at the same
time the mean concentration value of Mg** was reduced to 2.6 mg/100 ml and 2.2 mg/100 ml respectively.

1. The reduction in concentration of Mg** at the above-said intervals of treatment with Speman was statistically significant ($p<0.001$) (Table 1).

<table>
<thead>
<tr>
<th>No. of cases</th>
<th>Before treatment</th>
<th>30 days after treatment</th>
<th>60 days after treatment</th>
<th>Statistical significance of Mg**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sperm density</td>
<td>Concentration of Mg.</td>
<td>Sperm density</td>
<td>Concentration of Mg.</td>
</tr>
<tr>
<td>28</td>
<td>10.3</td>
<td>4.5</td>
<td>24.45</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>24.45</td>
<td>2.6</td>
<td>30.6</td>
<td>2.2</td>
</tr>
</tbody>
</table>

2. With the treatment at the dose of 2 t.i.d., majority of the patients responded by marked improvement in the quality of semen (McLeod) Figure 1.

3. The concentration of Mg** and the density of total motile count was found to be negatively correlated (Figure 2).

DISCUSSION

The role played by divalent cation, Mg** in vital physiological functions of the body is very well-known. The abundant presence of Mg** in prechambarian seas shows evidence of the development of anabolic glycolysis, as one of the most primitive energy yielding processes. The human sperms, though not completely but to a greater extent, depend and live longer when they turn towards anaerobic glycolysis for their energy. The Mg** is reported to activate the ATPase— the energy yielding system for the flagellar movement of the sperm like Ca** in the muscles.

Frazer and MacIntyre report the paramount role of Mg** in activating varied vital enzymatic systems in the body viz., alkaline phosphatase (a major androgen dependent enzyme present in the prostate) pyrophosphatase, enzyme transferring phosphate from ATP and ADP, membrane ATPase which helps in membrane transport. The increased activity of the cells in the body is associated with intracellular increase in Mg**. The prostate is the major or almost the sole source of Mg**. Hence the estimation of Mg** may help in the functional evaluation of the prostate. The increase in the sperm...
density may be because of the drug Speman as elaborated by previous authors. In this study we have clearly shown that Speman improves the quality of semen in almost all such oligospermic men to a variable degree. This improvement in the quality of semen is negatively correlated with the concentration of Mg**, this -ve correlation may probably be the result of more utilisation of Mg** by the cells of accessory glands as well as sperms after the treatment with Speman. However, this statement needs more elaborate estimation of intra as well as extra-cellular Mg**. The mechanism by which Speman causes such effect on metabolism Mg**, needs to be expedited.

CONCLUSION
Speman has a highly beneficial effect on the functioning of the accessory glands, mainly the prostate. Apart from other modes of action, it brings about its beneficial effect by influencing the metabolism of divalent action Mm** by the accessory glands.

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REFERENCES