Effect of Mentat, a Herbal Preparation, on Metrazole-induced Seizures and Restraint Stress Ulcers – Preliminary Findings in a Controlled Study

Vaishali N. Dadkar, M.D.,
Professor and Head Department of Pharmacology,
L.T.M.M. College and L.T.M.G. Hospital, Sion, Bombay, India.

ABSTRACT
In an experimental placebo-controlled study on albino mice of either sex in whom seizures were induced by metrazole administration, significant rise in the metrazole threshold was seen in those mice treated with Mentat. Likewise, in albino rats of either sex in whom restraint stress gastric ulcers were induced, significant reduction in the ulcer score was seen in the Mentat treated animals.

These findings were in contrast to those seen in the placebo-treated group.

INTRODUCTION
Mentat is a complex herbal preparation, which contains Ashwagandha, Shankhpushpi, Jatamansi, Tagar etc. reputed to have antistress and sedative properties. It is now increasingly believed that carefully formulated combination drugs have better biological activity than unprocessed single ingredients. This study was planned to test the effect of Mentat on two experimental models of stress and epilepsy.

MATERIALS AND METHODS
1. Metrazole threshold in mice: Albino mice of either sex (19-21 gm) were used for intravenous metrazole assay. Metrazole 10 mg/ml of heparinised saline (10 mg of heparin added to 25 ml of 0.9% sodium chloride) was infused through a tail vein at the rate of 0.2 ml/min using a slow infusion pump. There was an initial switch response (Stage I) followed by generalised clonic convulsions (Stage II), tonic extension of hind limbs (Stage III) and death. The period from the time of beginning of infusion to the stage of tonic extension of hind limbs was referred to as the metrazole threshold of the animals.

a) In pilot experiments, 10 mice in Group I served as control while the other group received Mentat, 12 ml/kg once a day orally for 10 days. Metrazole threshold was checked in both groups after 10 days treatment with Mentat.

b) In the other placebo-controlled study, 4 groups of mice (8 per group) received either placebo or Mentat in two doses. Groups I and II received 1 ml/100 g and 2 ml/100 g of Mentat for 10 days, while animals in Groups III and IV received matched placebo in the same dose. The three stages of seizures were studied by

infusion of metrazole in all 4 groups on day 10, 2 hours after the last dose, and the metrazole threshold was determined.

2. **Restrains stress gastric ulcers in rats**: Albino rats of either sex (130-180 gm) were used in this study. They were allotted to groups of 10 each. Animals in Group I received Mentat at a dose of 12 ml/kg once a day orally for 10 days. The other group received matched placebo in the same dose for 10 days. On day 10, animals in both groups were subjected to restraint stress. For this purpose, they were kept fasting for 24 hrs with free access to water and then their fore and hind limbs were tied to a wooden board. The animals were kept in the "head low" position for 18 hours with the board inclined at an angle of 60°, as this modification was found to enhance stress-mediated gastric ulcers.

At the end of the stress period, their stomachs were removed and cut open along the greater curvature. After washing lightly with tap water, the stomachs were pinned over a wooden board for microscopic examination and scoring of ulcers. Ulcers were found to be located in the glandular portion of the stomach. Ulcers measuring less than 1 mm were not scored. The overall ulcer score was defined as the sum of the maximum continuous length (mm) of each lesion in the stomach.

**RESULTS AND DISCUSSION**

1a. **Metrazole threshold and effect of Mentat** (n=10)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>42 ± 3.63 sec</td>
<td>58 ± 2.96**sec</td>
<td>**p&lt;0.01</td>
</tr>
</tbody>
</table>

1b. **Metrazole threshold in placebo-controlled experiments** (n=8)

<table>
<thead>
<tr>
<th>Stages of seizures</th>
<th>Drug</th>
<th>Group I</th>
<th>Group II</th>
<th>Group III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mentat (1 ml/kg)</td>
<td>27.00 ± 0.98***</td>
<td>32.00 ± 1.38**</td>
<td>56.00 ± 0.65*</td>
</tr>
<tr>
<td></td>
<td>Mentat (2 ml/kg)</td>
<td>35.00 ± 6.04**</td>
<td>46.00 ± 4.97***</td>
<td>60.00 ± 4.77*</td>
</tr>
<tr>
<td></td>
<td>Placebo (1 ml/kg)</td>
<td>14.00 ± 0.84</td>
<td>21.00 ± 2.45</td>
<td>47.00 ± 4.12</td>
</tr>
<tr>
<td></td>
<td>Placebo (2 ml/kg)</td>
<td>14.00 ± 0.85</td>
<td>19.00 ± 1.16</td>
<td>47.00 ± 2.72</td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01 and ***p<0.001

Mentat 1 ml/100 g compared to placebo 1 ml/100 g

Mentat 2 ml/100 g compared to placebo 2 ml/100 g.

It was observed that there was no change in the metrazole threshold with placebo as compared to the control. However, there was a significant dose-related increase in seizure time in Stages I and II with Mentat as compared to placebo. Metrazole threshold was also significantly increased in the Mentat pretreated group.
2. **Restraint stress ulcer score (n=10)**

<table>
<thead>
<tr>
<th></th>
<th>Placebo</th>
<th>Mentat pretreatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.2 ± 1.1 mm</td>
<td>1.9 ± 0.4** mm</td>
</tr>
</tbody>
</table>

**p<0.01**

There was significant reduction in stress-induced ulcer score in the Mentat pretreated group.

**CONCLUSION**

The ingredients present in Mentat are reputed to possess antistress and sedative properties. The results of these preliminary studies clearly indicate its efficacy. These findings need to be confirmed in further controlled studies.

**REFERENCES**


