SECTION II-c

TESTING OF OLIVE OIL, SAFFOLA OIL, AND ARACHIS OIL FOR ANTIULCER ACTIVITY IN PYROLUS-LIGATED RAT
INTRODUCTION:

It has been reported that the incidence of gastric lesions produced by pyloric ligature of rat stomach, after starvation was decreased by olive oil. The acidity and pepsin activity of the gastric contents were also decreased by olive oil\(^{190}\). Hence, it was decided to study the efficacy of olive oil, saffola oil, and arachis oil in experimentally induced acute gastric ulcerations.

Gastrointestinal irritation, sometimes leading to ulceration and haemorrhage is a frequent side effect associated with oral administration of many drugs belonging to diverse classes. This side effect is a major cause of non-compliance in patients and also poses further therapeutic problems. In such situations drugs possessing protective action against ulcer formation would be welcome addition to therapeutic armamentarium. The oils having protective action can be suggested as a vehicle for preparing antacid suspensions.
EXPERIMENTAL

Ulcers were produced by ligature of the pylorus. A group of five female albino rats, weighing 180 to 230 gm, were used for each oil and control. After a fast of 72 hours, the pylorus of the stomach was ligated under light ether anesthesia. The wound was closed and the rats were allowed to recover. Half of the test compound, one cc of oil per 100 gm body weight, was administered perorally; the other half was given perorally four hours later, the rats were allowed no water. In the control group one cc of water per 100 gm body weight was given at zero hour and the same dose was repeated 4 hours later. The rats were sacrificed four hours after second dose by a chloroform overdose. After sacrifice the stomach contents were aspirated. The stomachs were removed, pinned on a piece of thermocol and fixed in 10% formalin. The gastric mucosa were examined with a magnifier and the ulcer index, for each oil, was calculated by a method described earlier.

The ulcers were counted and graded (0 to ++++) and the ulcer index was calculated by the use of following equation. The animals who died during experiment were discarded from study.
Ulcer index = \% incidents/10 + average severity + average number per group in pluses

The gradation of ulcers was done as given below:

Grade 0  Normal mucosa
Grade 1  Edema
Grade 2  Reddening of mucosa
Grade 3  Petechiae
Grade 4  Erosions
Grade 5  Ulcer
Grade 6  Ulcer with perforation

The results are tabulated in Table III-1.
RESULTS AND DISCUSSION

The average value of ulcer index is calculated as 15.37, 10.05, 13.5, and 11.75 in the control, arachis oil, olive oil, and saffola oil respectively. It can be concluded from these findings that the saffola oil and arachis oil possess protective effect against ulcer formation in pylorus-ligated rats.

The protective effect might be due to coating of gastric mucosa by the oils. It has been noted that the symptoms of acidity are relieved when oily foods are consumed.

It is suggested from these findings that the effectiveness of antiulcer medications like antacids, can be enhanced by the use of oils as part of the formula. The antacids present in oily suspensions or emulsions will neutralize the surplus amount of hydrochloric acid and the oil will help in protecting the gastric mucosa.
## Table III-1
### IN-VIVO TESTING OF OILS

<table>
<thead>
<tr>
<th>Run</th>
<th>Group</th>
<th>%</th>
<th>Incidence grade</th>
<th>Average ulcer grade in pluses</th>
<th>Ulcer Index</th>
<th>Average Ulcer Index</th>
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<tbody>
<tr>
<td>I</td>
<td>Control</td>
<td>100</td>
<td>4.4</td>
<td>1.6</td>
<td>16.0</td>
<td>15.37</td>
</tr>
<tr>
<td>II</td>
<td>Control</td>
<td>100</td>
<td>3.0</td>
<td>1.75</td>
<td>14.75</td>
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<tr>
<td>I</td>
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<td>1.8</td>
<td>0.6</td>
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<td>10.5</td>
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<tr>
<td>II</td>
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<td>80</td>
<td>1.6</td>
<td>1.0</td>
<td>10.6</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Olive oil</td>
<td>100</td>
<td>3.0</td>
<td>1.0</td>
<td>14.0</td>
<td>13.5</td>
</tr>
<tr>
<td>II</td>
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<td>100</td>
<td>2.0</td>
<td>1.0</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Saffola oil</td>
<td>75</td>
<td>2.0</td>
<td>0.5</td>
<td>10.0</td>
<td>11.75</td>
</tr>
<tr>
<td>II</td>
<td>Saffola oil</td>
<td>75</td>
<td>2.75</td>
<td>0.75</td>
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