INTRODUCTION

Inflammation is a completely natural process that is part of the body’s response to any injury that it undergoes. This could be a toxin, a chemical or an infection. It is designed to wall off the area so that damage cannot spread very far. It is of two types, acute inflammation which starts suddenly but goes away relatively quickly, and chronic inflammation that can remain active for months, years or decades. It is characterized by four major features: Redness, Heat, Pain, and Loss of Function. As per the literature the plant Abutilon indicum and its parts employed in the management of toothache, tender gums and for inflammation of bladder, ulcer. Pedalium murex is mainly used as a vata and pitta suppressant. It helps in suppressing pain and inflammation due to its sweet taste. It also provides strength to the body due to presence of slimy properties and sweet taste. It is a good aphrodisiac and as an effective diuretic agent as well.

MATERIALS AND METHODS

Plant material:
The plant specimen of Abutilon indicum and Pedalium murex Linn was collected from Mooligai Pannai (7 Km away from Thanjavur, Tamilnada) and authenticated by Dr. N.Ravichandaran, CARISM, SASTRA University, Thanjavur. The voucher specimen is kept in our department for future reference.

Chemicals:
All the chemicals and reagents used were of Analytical grade purchased from SD Fine chemicals, Mumbai.

Pharmacognostical Screening of Plants:
Different physio-chemical values such as Ash values, Extractive values, Loss on drying and crude fiber content were determined and tabulated.

Extraction
Air dried leaves of Abutilon indicum was extracted with 95% methanol in a soxhlet extractor. The extract was quantified by measuring the increase in paw volume (ml) at before carrageenan injection and at 1, 2, 3, 4, 5 and 24 h after carrageenan injection with plethysmometer (UGO Basil, Italy). The edema component of inflammation was determined immediately before carrageenan injection and at selected times thereafter using a plethysmometer (UGO Basil, Italy). The edema component of inflammation was quantified by measuring the increase in paw volume (ml) at before carrageenan injection and at 1, 2, 3, 4, 5 and 24 h after carrageenan injection with respect to the pre-injection value for each animal.

Results: The preliminary phytochemical study reveals the presence of Alkaloids, Glycerides, sterols and tabulated. (Table: 1)

Phytochemical screening of Extracts:
Phytochemical screening of drug was carried out as per method Peach and Tracy 1995[5].

Anti-Inflammatory Activity of methanol extract of Abutilon indicum and Pedalium murex

Animals
Male Albino wistar rats weighing 200–300 g, obtained from Central Animal Facility, SASTRA University, Thanjavur were used in this study. Animals were housed in a standard environment and maintained on tap water and rodent food ad libitum throughout the investigation. The rats were acclimatized to laboratory condition for 10 days before commencement of experiment. All procedures described were reviewed and approved by the Institutional Animal Ethics Committee and the CPCSEA approval number is 67/SASTRA/IAEC/RPP.

Carrageenan-induced Paw Edema (insert ‘r’)
A.indicum and P. murex methanolic extract was evaluated for anti-inflammatory activity using the carrageenan-induced paw edema assay in rats according to Winder et al.[6, 7]. Rats were fasted for 12 h and were divided into six groups and the effect of oral administration of A. indicum and P. murex at doses of 200 and 400 mg/kg, B.Wt. orally or Diclofenac sodium (50 mg/kg, B. Wt. p.o.) given as a 60 min pretreatment was studied. Paw edema was induced by sub-plantar injection of 100 µl of a 1% sterile carrageenan lambda in distilled water into the right hind paw. Paw volume was determined immediately before carrageenan injection and at selected times thereafter using a plethysmometer (UGO Basil, Italy). The edema component of inflammation was quantified by measuring the increase in paw volume (ml) at before carrageenan injection and at 1, 2, 3, 4, 5 and 24 h after carrageenan injection with respect to the pre-injection value for each animal.

Key words: Abutilon indicum, Pedalium murex, Inflammation, Albino wistar rats.
The plants were selected on the basis of their medicinal property in the management of inflammation. The plants were separated, dried under shade and subjected for the Pharmacognostical studies. Physico-chemical studies such as determination of moisture, ash value and crude fibre content was performed. Consequently, phytochemical studies were performed, the results reveals the presence of alkaloids, flavanoids, glycosides, steroids, carbohydrates. The anti-inflammatory activity was performed using the extract of leaves of Abutilon indicum and Pedalium murex Linn. using Carrageenan induced paw edema principle in albino wistar rats. Out of these two plants tested Pedalium murex shown to exhibit significant anti-inflammatory activity than the Abutilon indicum. This may helpful in proceeding further research in this direction in future.

**ACKNOWLEDGEMENT:**

Authors are thankful to the authorities of SASTRA University.

**REFERENCES**


**Statistical analysis**

Results are presented as mean ± standard error of mean (S.E.M.). Data was subjected to descriptive statistics and analysis of variance (ANOVA) and complemented by Dunnett’s post hoc test where appropriate. P < 0.05 was considered as indicative of significance using GraphPad Software, Prism V. 5.0.

Table 6 Anti-Inflammatory Activity by Using Carrageenan Induced Paw Edema In Rats (space between ‘Activity by’ and insert ‘r’)

<table>
<thead>
<tr>
<th>Drug</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>STD</td>
<td>0.1± 0</td>
<td>0.23±0.02</td>
<td>0.36± 0.02</td>
<td>0.5±0.02</td>
<td>0.65±0.02</td>
<td>0.25±0.5</td>
</tr>
<tr>
<td>DIS</td>
<td>0.1± 0</td>
<td>0.23±0.02</td>
<td>0.36± 0.02</td>
<td>0.5±0.02</td>
<td>0.65±0.02</td>
<td>0.25±0.5</td>
</tr>
<tr>
<td>A.indicum (200)</td>
<td>0.11±0.01</td>
<td>0.26±0.03</td>
<td>0.41± 0.01</td>
<td>0.58±0.03</td>
<td>0.73±0.04</td>
<td>0.25±0.06</td>
</tr>
<tr>
<td>A.indicum (400)</td>
<td>0.1±0</td>
<td>0.26±0.02</td>
<td>0.43± 0.02</td>
<td>0.56±0.02</td>
<td>0.73±0.03</td>
<td>0.23±0.02</td>
</tr>
<tr>
<td>P.murex (200)</td>
<td>0.1±0</td>
<td>0.23±0.02</td>
<td>0.41± 0.01</td>
<td>0.53±0.02</td>
<td>0.71±0.01</td>
<td>0.15±0.03</td>
</tr>
<tr>
<td>P.murex (400)</td>
<td>0.1±0</td>
<td>0.23±0.02</td>
<td>0.41± 0.01</td>
<td>0.53±0.02</td>
<td>0.71±0.01</td>
<td>0.15±0.03</td>
</tr>
</tbody>
</table>

Values in mean±SEM, n=6, *p<0.05 were considered as statistically significant.

**DISCUSSION**

Injection of the inflammatory agent, carrageenan in the rat hind paws is a model frequently employed to study inflammation and evaluate the anti-inflammatory activity of various compounds. Previous studies in this model have led to the proposal of the following sequence of events. First, carrageenan stimulates the release of TNF-α, which, in turn, [1] induces IL-1β and IL-6, thus stimulating the production of COX products, and [2] induces another cytokine, IL-8, thus stimulating the local production of sympathetic amines. Bradykinin initiates cytokine mediated inflammatory hyperalgesia. Thus, a cascade of cytokine release preceded the release of COX products and sympathomimetic amines.

Table 5 Study Design for anti-inflammatory activity by using Carrag\-
\ enan induced paw edema in rats

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose</th>
<th>No. of animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Dichlofenac sodium-50 mg/kg B. Wt. p.o.</td>
<td>6</td>
</tr>
<tr>
<td>Disease control</td>
<td>0.1ml of 1% solution of carrageenan</td>
<td>6</td>
</tr>
<tr>
<td>Abutilon indicum</td>
<td>200 mg/kg B. Wt. p.o.</td>
<td>6</td>
</tr>
<tr>
<td>Abutilon indicum</td>
<td>400 mg/kg B. Wt. p.o.</td>
<td>6</td>
</tr>
<tr>
<td>Pedalium murex</td>
<td>200 mg/kg B. Wt. p.o.</td>
<td>6</td>
</tr>
<tr>
<td>Pedalium murex</td>
<td>400 mg/kg B. Wt. p.o.</td>
<td>6</td>
</tr>
</tbody>
</table>

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