Evaluation of Analgesic Activity of Kadukkai Podi (Terminelachebula Retz) in Animal Models

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Abstract: In recent years, there has been an increasing interest to find new anti-inflammatory and analgesic drugs with mild side effects from natural sources and siddha formulations. The analgesic effects were evaluated for siddha Single Herb Kadukkai Podi in rat using acetic-acid writhing test and hot plate methods. Analgesic activity is found using Acetic acid-induced writhing test in adult male albino mice (25-35 g). The Kadukkai Podi demonstrated a dose-dependent, significant antinociceptive activity in animal models of pain. The analgesic activity shown in models of pain is indicative that siddha single Herb- Kadukkai Podi 200mg/kg showed centrally and peripherally mediated antinociceptive properties. The concluded that possesses anti-nociceptive properties which are probably mediated via inhibition of prostaglandin synthesis as well as central inhibitory mechanisms which may be of potential benefit for the management of pain and inflammatory disorders.

Keywords: Siddha single Herb- Kadukkai Podi, Antinoiceptive, Analgesic activity, Writhing test

1. Introduction

Inflammation and pain are common nonspecific manifestations of many diseases. Although non-steroidal anti-inflammatory drugs (NSAIDs) and opiates have been used classically in these conditions, but some adverse reactions occur with these drugs such as gastrointestinal disturbances, renal damage, respiratory depression, and possible dependence (1-2). In recent years, there has been an increasing interest to find new anti-inflammatory and analgesic drugs with possibly fewer side effects from natural sources and siddha formulations. Based on Indian folk medicine, in the present study analgesic effects were evaluated for siddha Single Herb Kadukkai Podi in rat using acetic-acid writhing test and hot plate respectively.

2. Materials and Methods

Animals

24 adult male albino mice (25-35 g) were housed in animal house, K. M. College of Pharmacy, Madurai, under standard laboratory conditions (temperature 23 ± 2 °C) with 12 h dark and 12 h light cycle. The animals had free access to standard dry pellet diet and tap water ad libitum.

Analgesic activity

Acetic acid-induced writhing test

The acetic-acid writhing test was performed using the reported procedure (3). Groups of rats (n=6), were administered with 100 and 200 mg/Kg of siddha Single Herb Kadukkai Podi, 10 mg/Kg Diclofenac as positive control group and 1 ml distilled water as negative control group. After 30 minutes the animals were administered with i.p. injection of 0.1 mL acetic acid (0.6%). Then the count of abdominal contractions of animals during 30 minutes after acetic acid injection was reported and the Percentage Analgesic Activity (PAA) was calculated by using the following formula:

\[ \text{PAA} = \frac{(C - CD)/CD} \times 100 \]

C = Mean of contractions’ count in animals treated with different doses of siddha Single Herb Kadukkai Podi and Diclofenac sodium
CD = Mean of contractions’ count in animals served as negative control

Statistical analysis

The results are reported as mean ± S.E.M. The statistical analyses were performed using one way analysis of variance (ANOVA). Group differences were calculated by post hoc analysis using Tukey’s test. For all tests, differences with values of P<0.05 were considered significant.

3. Results and Discussion

Acetic acid-induced writhing response

The study showed, the different doses of siddha Single Herb Kadukkai Podi had significant analgesic effects in the animals under investigation. The results of doses 100 and 200 mg/Kg were significant and comparable with the effect of Diclofenac sodium in analgesic activity (Table 1).

<table>
<thead>
<tr>
<th>Groups</th>
<th>Treatment</th>
<th>(number of writhing movements) (Mean ± S.E)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group I</td>
<td>Distilled water</td>
<td>38.5±2.8</td>
<td>-</td>
</tr>
<tr>
<td>Group II</td>
<td>Diclofenac sodium 10mg/kg</td>
<td>6.5±0.6</td>
<td>83.11%**</td>
</tr>
<tr>
<td>Group III</td>
<td>100mg/kg Kadukkai Podi</td>
<td>12.0±1.3</td>
<td>68.83%**</td>
</tr>
<tr>
<td>Group IV</td>
<td>200mg/kg Kadukkai Podi</td>
<td>11.8±1.0</td>
<td>69.35%**</td>
</tr>
</tbody>
</table>

Values are expressed as mean ± SEM.
* (b) Values are significantly different from Toxic control G2 at P<0.01.

The analgesic activity was assessed by writhing test which has been reported to be useful for investigation of peripheral antinociceptive activity and performed as a chemical pain model (4, 5). The siddha Single herb Kadukkai Podi demonstrated a dose-dependent, significant antinociceptive activity in animal models of pain. Acetic acid believed to increase the PGE2 and PGF2α in peritoneal fluid (6). The analgesic activity shown in models of pain is indicative that siddha Single herb Kadukkai Podi might possess centrally and peripherally mediated antinociceptive properties.

The Phyto-Chemical of Kadukkai Podi, the presence of flavonoids, saponins or phenolic compounds may be responsible for the antinociceptive activities. This study revealed that, a significant analgesic effect of Kadukkai Podi. The presence of terpenoids, saponins and phenolic compounds Kadukkai Podi is responsible for analgesic effect.

4. Conclusion

This research concluded that Kadukkai Podi possesses antinociceptive properties which are probably mediated via inhibition of prostaglandin synthesis as well as central inhibitory mechanisms which may be of potential benefit for the management of inflammatory disease.

5. Acknowledgment

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6. Conflict of Interest

The Author declares no potential conflicts of interest with respect to the research and publication of this article.

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