International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2019): 7.583

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 Podi200mg/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, Antinociceptive, 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 with100 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:

PAA = ((C- CD)/CD) ×100
C = Mean of contractions' count in animals treated with different doses of siddha Single HerbKadukkai Podiand Diclofenacsodium
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 Podihad 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 1: Effects of siddha Single Herb Kadukkai Podion acetic acid–induced writhing response (N=6 in each group)

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

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 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 inflammatory disease.

5. Acknowledgment

My special thanks to Dr A Manoharan for his guidance in this research. Heartful Thanks to Dr R Ajanthan for his Valuable help in completion of the work.

6. Conflict of Interest

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

7. Funding

The Author received no financial support for this research and publication of this article.

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