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Research Article

EVALUATION OF ANALGESIC ACTIVITY OF SIDDHA POLYHERBAL FORMULATION KURUNTHOTTI KASHAYAM

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Abstract

The present study was designed to evaluate the analgesic activity (Eddy's hot plate assay) of Kurunthotti Kashayam. The maximum threshold produced by Kurunthotti Kashayam at 100 milligram and200 mg per kilogram body weight was 5.96 and 7.7 respectively at 60 minutes. Kurunthotti Kashayam showed the maximum analgesic effect at 200 mg per kilogram body weight at 60 minutes. Both the samples exhibited dose dependent analgesic activity. However standard (Pentazocine 30 mg per kilogram ip) showed highly significant analgesic activity.

Keywords: African students in China, intercultural identity, Chinese language learning motivation.

INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. Moaning, guarding the area, restlessness, irritability are the signs and symptoms of pain . Analgesics are those drugs which reduce the pain without blocking the conduction of nerve impulse which can be classified into two types viz, Anti-inflammatory drugs which alleviate pain by reducing local inflammatory response and Opiods, which acts on the brain. The Opioid analgesics can induce sleep and can be used either short term or long term relief of severe pain. In contrast the anti-inflammatory compounds are used for short term pain relief and for modest pain such as that of headache, muscles strain, bruise or arthritis. Most of the analgesics inhibit prostaglandin synthesis and release by inhibiting the cyclooxygenaze enzymes. Most of these drugs inhibit both COX isoforms (COX-1 and COX-2). Opioids produce a variety of different adverse effects including histamine release, endocrine system suppression, cardiovascular disorders, respiratory depression, skeletal muscle rigidity etc. The efficacy of NSAID drugs makes them one of the most widely used medicine for pain management. However the long term use may lead to different systemic diseases like nausea, constipation, perforation ulcer affecting the GIT, hypertension ,MI, stroke, thromboembolic events, inhibiting platelet activation – in the cardiovascular system, salt and water retention, deterioration of kidney function, hyperkalemia, analgesic nephropathy affecting the- renal system, vertigo, depression, lowering of seizure threshold, hyperventilation affecting the central nervous system, hepatotoxicity, hypersensitivity etc. The wide range of side effects of these drugs (both opiods and NSAIDs) necessitated the need for analternative. This resulted in the emergence of new researches in the pharmacological evaluation of medicinal plants and formulations mentioned in the traditional system of medicine in India. Kurunthotti kashayam with 20 medicinal plants as ingredients is one of the polyherbal formulation of siddha medicine used as an Analgesic decoction for a variety of diseases viz sprains, spasm, injuries etc. This Medicine was used by great Siddhars since then and even widely used in the present time by the current siddha practitioners. Though used extensively, the pharmacological evaluation was not done yet. Thus with an interest the present investigation was carried out to evaluate the analgesic activity of *kurunthotti kashayam* in experimental models (rats)

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MATERIALS AND METHODS

Raw drugs

The raw drugs was collected from the local market in Nagarcoil, Kanyakumari district, Tamil Nadu ,India in the month of January 2023. It was authenticated by Dr M D Saravana Devi MD(s) Professor, Head of the department, Department of Post Graduate Gunapadam, Government Siddha Medical College, Chennai.

Preparation of the Kurunthotti Kashayam

The freshly collected drugs were dried under shade and powdered. The powdered material was sieved. 15.3g each *of Kurunthotti ver, Chundai ver,Thara ver, Vellai kundri ver, Mana thakkali ver, Charanai ver, Isangu ver, Arugan ver, Paruthikkottai and 10.2g each of Kunthirikkam, Tikkamalli pisin, Koshtam, Kadukkai, Nellikkai, Tantrikkai, Thippili moolam, Inji, Kudasapalai arisi, Thippili, Kombarakku*was taken. To this , 1.44L of water is added and heated until it gets reduced to 180ml to form the Kurunthotti Kashyam. This was then subjected to evaluation of analgesic activity.

Chemicals

Pentazocine was used as the reference standard for evaluating analgesic activity.

Animals

Wiser rats which are healthy and adults of either sex weighing between 200 to 250 g where used forthe study.

Table 1.

S. No	Tamil name	Botanical name	Family	Vernacular name	Used part
1	*Kurunthotti ver*	*Sida cordifolia*	Malvaceae	Country mallow	Root
2	*Chundai ver*	*Solanum torvum*	Solanaceae	Turkey berry	Root
3	*Thara ver*	*Borreria hispida*	Rubiaceae	Landrina	Root
4	*Vellai kundri ver*	*Abrus pulchellus*	Fabaceae	Showy rosary pea	Root
5	*Manathakkali ver*	*Solanum nigrum*	Solanaceae	Black nightshade	Root
6	*Charanai ver*	*Trianthema portulacastrum*	Aizoaceae	Giant pigweed	Root
7	*Isangu ver*	*Azima tetracantha*	Salvadoraceae	Bee sting bush	Root
8	*Arugan ver*	*Cynodon dactylon*	Poaceae	Bermuda grass	Rhizome
9	*Parutthi kottai*	*Gossypium herbaceum*	Malvaceae	Levant cotton	Seed
10	*Kunthirikkam*	*Boswellia serrata*	Burseraceae	Indian olibanum	Oleo gum resin
11	*Tikkamalli pisin*	*Gardenia gummifera*	Rubiaceae	Gummy cape jasmine	Gum resin
12	*Koshtam*	*Saussurea lappa*	Asteraceae	Indian Costus tree	Root
13	*Kadukkai*	*Terminalia chebula*	Combretaceae	Chebulic myrobalan	Drupe
14	*Nellikkai*	*Phyllanthus emblica*	Euphorbiaceae	Indian gooseberry	Berry
15	*Thanrikkai*	*Terminalia bellerica*	Combretaceae	Bedda nut tree	Drupe
16	*Thippili*	*Piper longum*	Piperaceae	Long pepper	Fruit
17	*Inji*	*Zingiber officinale*	Zingiberaceae	Common ginger	Rhizome
18	*Kudasappalai arisi*	*Holarrhena pubescens*	Apocynaceae	Bitter Oleander	Seed
19	*Thippili mulam*	*Piper longum*	Piperaceae	Long pepper root	Root
20	*Kombarakku*	*Laccifer lacca*	Rosaceae	Resinous glaze	Resin

Table 2.

Groups	Dose ml/kg	Reaction time 15 mins	30mins	45 mins	60 mins
Control (G-1)	1	2.2±.0.2	2.1±0.4	2.4±0.6	1.9±0.2
Pentazocine (G-2)	3	4.5±0.2	7.2±0.4	7.9±0.6	9.6±0.6
KURUNTHOTTI KASHAYAM (KK) (G-3)	2	2.64±1.6	3.98±1.8	4.94±1.6	5.96±2.6
KURUNTHOTTI KASHAYAM(KK) (G-4)	4	4.3±0.8	6.7±0.4	6.9±0.2	7.7±0.6
n=6 ; Statistical analysis one way ANOVA followed by Dunnett t-test.					

They were housed in standard polypropylene cages at a constant temperature 25±2ºC in 12hour light and dark cycle provided with standard diet with water throughout the experiments. All experiment protocols were approved by the institutional animal ethical committee under the regulation of committee for the purpose of control and supervision of experiments on animals (CPCSEA), New Delhi.

Experimental design

Eddy's Hot plate method in rats

The hot plate assay method was employed for the purpose of preferential assessment of possible analgesic effects of KURUNTHOTTI KASHAYAM. The analgesic drug, Pentazocine, was used for STD group. In this experiment, four groups (n=6) of Wister rats (200–250 g) were placed on a hot plate maintained at room temperature for 15 min. Food was withdrawn on the preceding night of the experiment. Group-1 normal control (0.5% CMC p.o.), and group-2 Pentazocine (30mg/kg, i.p.), whereas groups-3 and 4 animals received KURUNTHOTTI KASHAYAM (100and 200 mg/kg, p. o respectively). Each animal was then individually placed gently on Eddy's hot plate at 55°C. Latency to exhibit nociceptive responses such as licking paws or jumping off the hot plate, were determined 15, 30, 45 and 60 min after administration of the test drug or vehicle.

RESULTS

Effect of the Kurunthotti Kashayam on eddy's hot plate induced pain. The rats treated with oral administration of Kurunthotti Kashayam show increased threshold to pain. The threshold of pain increased with time and gave maximum effect at 45 and 60 minutes.

The maximum threshold produced by Kurunthotti Kashayam at 100 milligrams and 200 mg per kilogram body weight was 5.96 and 7.7 respectively at 60 minutes. Kurunthotti kashayam show the maximum analgesic effect at 200 mg per kilogram body weight at 60 minutes. Both the samples exhibited dose dependent analgesic activity. However standard (Pentazocine 30 MG per kilogram ip) showed highly significant analgesic activity. Results were shown in the table 1.

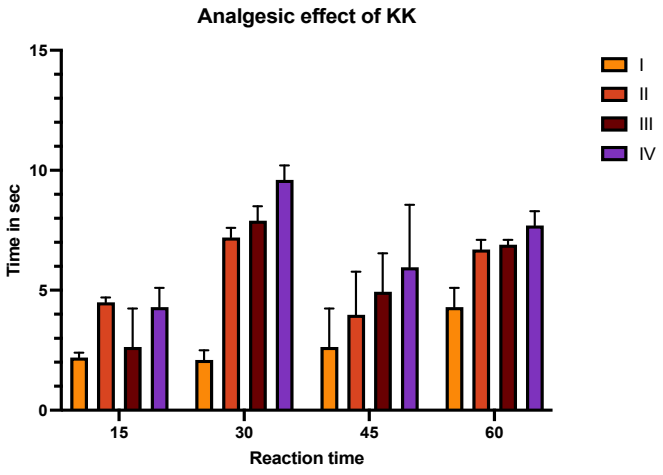

Figure 1.

DISCUSSION

The Kurunthotti Kashayam significantly reduced the number of paw licking or jumping off the hot plate induced pain by eddies hot plate method used to screen analgesic effect. The results supported the hypothesis of inhibition of the synthesis and release of prostaglandin by inhibiting cyclooxygenase enzymes by the oral administration of Kurunthotti Kashayam.

It also suggests that the Kurunthotti Kashyam might inhibit or modify responses to pain mediated by nociceptors peripherally. From this experiment it can be concluded that this drug increases the pain threshold against hot plate induced pain.

Conclusion

Eddy's Hot plate induced pain is a standard experimental model for screening the effectiveness of analgesic drugs by observing the reaction of rats to pain caused by heat. The study showed significant analgesic activity of kurunthotti kashayam at 100 milligrams and 200 mg per kilogram body weight by inhibiting the pain induced by the hot plate. The present study proves scientifically the use of Kurunthotti Kashayam for analgesic effect However, further phytochemical studies are required for isolating the active compounds responsible for the pharmacological action of analgesia.

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