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ANALGESIC EFFECTS OF *KARANTHAI RASAYANAM*, A SIDDHA POLYHERBAL FORMULATION VERSUS PARACETAMOL IN ANIMAL MODELS

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ABSTRACT

Introduction: Pain is an unpleasant experience that affects the quality of life and it is the one which makes people to seek healthcare services. The conventional drugs that are used in pain management are opioid and Non opioid analgesics. These conventional drugs cause undesirable adverse effects like gastrointestinal bleeding, kidney damage etc. These adverse effects can be prevented by consuming herbal drugs which have similar therapeutic effects. *Karanthai Rasayanam* is a Siddha polyherbal formulation used in the treatment of various ailments. **Materials and Methods:** The analgesic effect of *Karanthai rasayanam* is studied using tail flick method immersed in hot water. Three groups of rats were used. First group was given test drug KR at the dose of 200 mg / 100gm body weight), Paracetamol is used as standard drug at a dose of 20 mg/100 gram body weight and third group was given 2 ml of water as control. **Result:** The test drug *Karanthai rasayanam* has significant analgesic effects.

KEYWORDS: Analgesic, Anti Inflammatory, *Karanthai rasayanam*, Siddha, tail immersion method.

1.0. INTRODUCTION

Pain is an unpleasant feeling that affects the quality of life. It was defined by the International Association for the Study of Pain (IASP) as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage".[1]

Fast Pain is a localized pricking type of pain felt less than a second after application of pain stimulus like electrical, thermal, and chemical stimuli. This type of pain is superficial and is not felt in most deep part of the body tissue. Fast pain is transmitted in the peripheral nerves to the spinal cord through a nerve called A delta fibers (Ad fibers) at a speed of 5-30 m/s. The high conductive velocity of pain stimulus allows the body to withdraw immediately from the painful and harmful stimuli in order to avoid further damage. For example, touching hot plate and pin pricking.[2]

Slow pain is a throbbing, diffused, slow burning pain felt few seconds after pain stimulus is applied and may last for minutes, weeks, and even resulting to chronic pain if not properly processed by the body. Slow pain starts immediately after fast pain subsides. It is felt mostly in deep tissue of the body. Slow pain is transmitted by C-fibers (with diameter 0.2 and one thousand of a millimeter) to the brain at a velocity of 0.5-2 m/s. The response of the body is to hold the affected body part immobile so that healing can take place. Other types of pain are: Referred pain, viscera pain, etc.[2]

Unfortunately, even though at this moment there is a wide range of conventional drugs available for pain management, the safety profile of these medicines are not always good. One of the most commonly used analgesics and also largely available worldwide is paracetamol (acetaminophen). Paracetamol represents the first-line analgesic treatment in children[3], pregnant women[4] and elderly.[5] In order to limit the accidental severe liver failure, the US Food and Drug Administration recently recommended restricting the dose of paracetamol prescribed or dispensed to 325 mg per tablet when found in combination medicines.[6] Similarly other Opioids and Non Opioids have their own risks and adverse effects. These presenting challenges have triggered scientific researchers all over the world in search of potential anti inflammatory and analgesics in traditional system of medicine. Though wide range of anti inflammatory and analgesics are available in Siddha system of medicine, they lack scientific evidences. *Karanthai rasayanam(*KR)[7] is one such skin specific anti inflammatory drug that has been used in the treatment of eczema for centuries.

KR is a polyherbal formulation containing the following ingredients (mentioned in Table 1). The individual ingredients of KR are used as single drug in the

treatment of many inflammatory disorders. KR is used in various ailments like *Kushta (*Skin Disorders), *Karappan*(Eczema), *Pouthiram*(Fistula), *Sori(*scabies*)* etc. Ingredients like Spaeranthus indicus, Nigella sativa, Psoralea corylifolia, Celastrus paniculatus are skin specific drugs that are having anti inflammatory and analgesic effect. Since Anti- inflammatory effect[8] was already studied the analgesic effect of *Karanthai rasayanam* was carried out using Tail immersion analgesic models in wistar albino rats to prove its clinical applicability.

2.0. MATERIALS AND METHODS

2.1 Preparation of the drug

The test drug KR was prepared as mentioned in the Siddha literature *Bramma muni soothiram 380.* The standard drug Paracetamol was obtained from the local pharmacy.

2.2. Preparation of the test drug for animal experiments

1gm of *the* test drug KR was suspended in 10ml of distilled water with gum acacia as suspending agent. This 1ml contained 100mg of the test drug.

2.3. Equipment

Hot water bath.

2.4. Procedure

Procedure described by Uma devi *et al*[9] was used in this study. Six male albino rats (weighing 80-100gms) were used in three groups. The animals were allowed to free access to food and water until they brought to the experiment. The animals, which showed the positive response to the stimulus within a given time, were selected for the study.

After the selection of animals, which were responding to stimulus within 2 seconds, they were divided into 3 groups, each group consisting of 2 rats. First group was given the dose of 200mg/100gm body weight of the animal. Second group was administrated with paracetamol at a dose of 20mg/100gm of body weight. Third group was given to the 2 ml of water and kept as control.

The tail of the rat was immersed into the water bath containing warm water maintained at the temperature of 50 ± 1^0C and time taken for the mice to flick the tail or withdraw it from the water bath known as pain reaction time was noted. The cut off time was put at 8 seconds.

3.0. RESULTS

The results of control group, standard group and drug treated group are presented in the Table 2. The result shows that the test drug KR and standard drug paracetamol showed significant increase in PRT when compared to the control group.

Table 1: Ingredients of *Karanthai Rasayanam*.

S.No	Ingredients	Botanical Name
1.	*Kottai karanthai*	*Spaeranthus indicus*
2.	*Thandri kai*	*Terminalia bellerica*
3.	*Sukku*	*Zingiber officinale*
4.	*Thippli*	*Piper longum*
5.	*Kadukkai*	*Terminalia chebula*
6.	*Milagu*	*Piper nigrum*
7.	*Karuncheerakam*	*Nigella sativa*
8.	*Vasambu*	*Acorus calamus*
9.	*Valuzhuvai*	*Celastrus paniculatus*
10.	*Koshtam*	*Costus speciousus*
11.	*Siruthekku*	*Clerodendrum serratum*
12.	*Karbogarisi*	*Psoralea corylifolia*
13.	*Kodiveli*	*Plumbago indica*
14.	*Rasakarpooram*	*Hydrogyrum subchloride*
15.	*Inthuppu*	Rock salt
16.	*Then*	Honey
17.	*Nei*	Ghee

Table 2: Analgesic effect of *Karanthai rasayanam*.

SI. No.	Group	Name of Drugs	Dose/100 gram body weight	Initial Reading	After Drug Administration Mean Pain (Seconds)		
					½ hour	1 hour	11/2 hour
1.	Control	Water	2ml	3	3	3	3
2.	Standard	Paracetamol	20mg	3	8	8	8
3.	Test drug	Karanthai Rasayanam	200mg	3	5	7	7

4.0. CONCLUSION

Chemicals released during the inflammatory process stimulate the nerve endings resulting in pain sensation. Though the conventional modern drugs are very effective in reducing the inflammation and pain, they also have associated risks and side effects. Above study reveals that *Karanthai Rasayanam* has significant analgesic effect in animal model. Further Clinical trials has to be carried out using *Karanthai rasayanam* for various ailments mentioned in literatures to prove its therapeutic efficacy.

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