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Research Article

EXPERIMENTAL EVALUATION OF VEDANASTHPANA MAHAKASHAYA GANA FOR ITS ANALGESIC ACTIVITY

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Abstract

If a person wants to live happily he should be devoid of pain. Now a days, a general misconception regarding the Ayurvedic science is that the science has only few formulations having analgesic activity or nil pain killers or prevailing is that Ayurveda is devoid or having few preparations, which have analgesic effect. But if we observe minutely the classics and interpret in a proper way, then a lot of formulations having vedanasthapana effect can be found. In this context, drugs from *Charakokta Vedanasthapana Mahakashaya* were taken in to consideration to evaluate the analgesic effect experimentally.

Keywords: *Vedanasthapana Mahakashaya*; *Vedanasthapana*; Pain; Analgesic.

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INTRODUCTION

"Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage."[1]

Pain is one of the most common and distressing symptom in various ailments. Ancient philosophers were puzzled in understanding pain mechanisms and mostly considered pain as emotional. Aristotle called it as "Passion of the soul". The word pain is derived from the Latin word *"Peona"* means penalty, that which must be paid. It also means punishment, which is usually painful. It is the physical or psycho-physical suffering, a specific sensation localized in a particular part of the body. Pain is unpleasant sensation no doubt, but on the whole it is usually beneficial to the man because: Pain is a natural warning signal, Pain is the most fundamental and primitive sensation, Pain is the protective mechanism of the body, Pain prevents further permanent or serious damage and Pain helps to preserve the organisms by securing withdrawal from harmful agents. So it is clear pain indicates the human body to take care of the health. So naturally the science has a lot of pain relieving medications, but many are having side effects. NSAID's produce side effects like gastric pain & bleeding, blood loss, hypovolaemia, decreased renal perfusion etc. But there are herbal drugs in Ayurveda which are good vedanasthapaka but to be proved scientifically.

Charakokta Vedanasthapana Mahakashaya has the ten drugs which are effective in relieving pain when used either in single or in compound formulations.[2] But the vedanasthapana drugs said by Acharya Charaka may be safe and may not produce these adverse effects. Hence to prove with modern parameters i.e. experimental studies on mice to evaluate the analgesic effect Vedanasthpana Mahakashaya gana kashaya.

METHODOLOGY

I) Pharmaceutical study

Collection of drugs

All the raw drugs needed for the preparation were collected from Koppa, Udupi, Mumbai and Trivandrum market. All the drugs were identified according to Ayurvedic standards and were certified by Botanist.

Vedanasthapana gana kashaya

Ingredients of vedanasthapana gana kashaya are Sala, Katphala, Kadamba, Padmaka, Tumba, Mocharasa, Sirisha, Vetasa, Elavaluka and Ashoka.

Method of preparation

Ten different drugs of Vedanasthapana gana were collected, cleaned and weighed. Each drug 50 g were taken and pounded in Pounding machine to coarse powder and added with 8l of water and boiled until it gets reduced to $1/4^{th}$ (2 L). This kashaya was filtered through a clean cloth.

Observation

Kashaya was liquid in consistency and brown in colour with characteristic odour.

EXPERIMENTAL STUDY

Experimental models to evaluate nociceptive / analgesic effect

Pain is not a simple sensation caused by a specific stimulus but rather a complex reaction and experience with a multi dimensional quality. Hence, pain can be viewed as a complex experience, comprising of a sensory component referring to the qualitative sensory experience elicited by the stimulus and a reactive component that refers to the accompanying affective and emotional response.

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Response to the nocieptive stimulus

Whereas humans can express and distinguish a wide variety of painful sensations, animals can only display autonomic or somato-motor responses. Somato-motor responses like tail flick and writing are frequent reflexes in eliciting analgesic effect. Repeated presentation of the nociceptive stimulus can modify the response due to local alterations, tissue injury, inhibition and conditioning.

Commonly used nociceptive tests

Based on the nature of the stimulus, it can be divided into four categories: Chemical, Electrical, Mechanical, Thermal. Acetic acid, Acetylcholine, Hypertonic saline, Lipoxidase, Oxytocin are the chemical agents used. The various electrical stimulus are Electrical stimulation of the tail, Flinch- jump test, Trigeminal nerve stimulation, Shock titration technique, Tooth pulp stimulation. The various Mechanical stimulus are Tail- clip method, Tail compression test, Inflammatory pain, Toe squeezing technique. The Thermal stimulus are Tail immersion test, Hot plate method, Tail flick method.

Tail flick method (D' Amour & Smith-1941)

The technique is usually used in rats and mice. The animal is restrained with the help of a plastic holder, cloth holder or in a metal chamber. Radiant heat from an electric source is focused on the marked end of the tail and time of the reaction is noted. Then the drug is administered and the tail flick latency is measured at 30-minute intervals. Animals used should be young to minimize the heat insulating effect of keratinization of the tail. The area of the tail stimulation is important, as the distal tail section is more sensitive to the analgesic effect than the proximal section. Repeated testing at short intervals might affect tail- flick latency.[3]

MATERIALS AND METHODS

The present study was aimed to compare the efficacy of the preparation Vedanasthapana Mahakashaya in albino mice by the following method- tail flick using analgesiometer, developed by D'Amour, F.E & Smith, D.L, 1941.

a) Experimental animals

Experiments have been carried out on 12 healthy albino mice, weighing in between 20-25 grams, by using tail-flick method. Animals were procured from the experimental house attached with the institute. They were kept in cages under identical conditions with 12 hrs light and 12 hrs dark cycles. The animals were fed as per standard requirements and they were kept in well-ventilated rooms under hygienic conditions.

b) Animal selection criteria

Normally a mouse withdraws its tail within 4-7 seconds. A cut-off period of 10-12 sec. was observed to prevent any damage to the tail. Any animal failing to withdraw its tail from the heat source within 4-7 sec. was rejected from the study.

c) Dose fixing

Mice dose = 0.0026 x 50 x human dose in mg/ kg wt.

d) Grouping

12 mice were divided into 2 groups for the experimental study, each group consisting of 6 animals. GROUP-I was administered Ibuprofen suspension at a dose of 2 mg. GROUP-II was administered Kashaya at a dose of 0.156 ml orally. GROUP-I is the Standard group and GROUP-II is the trail group.

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e) Equipments

The analgesic activities of the samples were measured by using analgesiometer (tail flick method).

f) Procedure

The basal pain threshold (basal reaction time) of each individual animal was noted by placing the tip (last 1-2 cm) of the tail in the groove of the analgesiometer, just above the resistant wire, passing a current of 5 amps to heat the wire and the time interval between switching the analgesiometer and tail withdrawal from the heat source (tail flick response) was noted. Three such observations were made for each animal and the mean was taken.

The trial drug was given orally and the reaction time was noted at regular intervals i.e. 30, 60, 90, 120 & 180 minutes in each group. When the reaction time reaches 10 sec. it is considered as maximum analgesia and the tail was removed from the source of heat to avoid tissue damage

Observation

The tail flick responses in all the four groups were noted separately and subjected to statistical analysis in order to evaluate the analgesic activity of the compounds (by using student 't' test).

RESULTS

Tail flick response at the end of 30 minutes, 60 minutes 90 minutes shows that group one (G–1) is mildly significant ($p<0.1$) where as the trail group (G-2) was insignificant ($p>0.1$) at the end of 30 minutes, mildly significant ($p<0.1$) at the end of 60 minutes, and is moderately significant ($p<0.05$) at the end of 90 minutes. Tail flick response at the end of 120 minutes observed was group two (G-2) is moderately significant ($p<0.02$) where as the group – G1 was insignificant ($p>0.10$). Tail flick response at the end of 180 minutes observed was group two (G-2) was moderately significant ($p<0.01$) and group one (G-1) is insignificant ($p>0.1$). (Table 1)

By comparing G1 and G2 it was observed that G1 = G2 in 30, 60 and 90 minutes and G2 is moderately significant over G1 at the end of 120 minutes ($p<0.02$) and G2 is highly significant over G1 at the end of 180 minutes ($p<0.001$). (Table 2)

DISCUSSION

Vedana is initiated by asatmya sparsha in the indriyas distributed all over the body. This asatmya sparsha is produced by dosha vaishamya dominated by an increase of vata. According to Charaka, the reasons for vata kopa is either dhatukshaya or avarana. Almost all the dhatukshyas are associated with vedana, thoda. But vedana becomes more prominent and differentiated when vata is obstructed by other doshas or dhatus. According to Chakrapani, avarana is either vegapratibandha or margavarodha. In vegapratibandha the force and direction of vata is blocked suddenly. In margavarodha the vata is practically encircled by other doshas or dhatus. If vata is made free, vedana can be relieved.

Here comes the efficacy of Vedanasthapana gana. Even if the drugs of the combination directly not act as vata, shamana but alleviate pitta and kapha without provoking vata. Vata gati can be cleared by alleviating other doshas. The subject feels relief of pain when obstruction to vata is relieved.

It is also clear that kevala vata kopa is rarely associated with pain. It needs the help of other doshas in producing pain. There is a rule that in vata yukta samsargas, by equalizing other doshas, vata can be controlled, owing to the yogavahitva of vata. Here by controlling pitta and kapha vedana can be controlled.

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Table 1: Tail flick response

Tail flick response	Group	S.D	S.E	t - value	p- value
at 30 minutes	I	0.048	0.019	2.346	p<0.1
	II	0.051	0.020	0.621	p>0.1
at 60 minutes	I	0.054	0.022	2.169	p<0.1
	II	0.0375	0.0153	0.391	p>0.1
at 90 minutes	I	0.130	0.053	2.469	p<0.1
	II	0.034	0.014	2.629	p<0.05
at 180 minutes	I	0.044	0.018	0.457	p>0.1
	II	0.311	0.1272	5.648	p<0.01

Table 2: Inter group comparison (G1 & G2)

Time	t- value	p- value
30	1.154	p>0.1
60	1.561	p>0.1
90	1.713	p>0.1
120	3.015	p<0.02
180	5.536	p<0.001

Vata is the initiator of vedana, pitta shows an accelerating effect, while kapha shows an inhibitory effect. Vata- paittika samsarga is the most painful condition. In Vedanasthapana gana, most of the drugs have the property of pittashamaka. Alleviating pitta is best in vata- paittika samsarga to cure the condition. This also emphasizes the efficacy of Vedanasthapana gana.

CONCLUSION

The analgesics relieve pain by blocking the impulses at different stages of pain perception. The trial drug Vedanasthapana Mahakashaya has shown significant effect kashaya dosage form. The drug is having definite demonstrable antagonistic action against pain as an analgesic as ascertained by experimental study conducted on the albino mice. During the course of the study few points were observed. They are - The analgesic activity of the entire trial drug increased from 90 min and continued even at the end of 180 min.

Kashaya in comparison with the standard drug was found more active at different levels. The efficacy of the kashaya is more than standard drug at the end of 120 min. The probable cause for this may be the 't 1/2' of the standard drug. The plasma levels of Ibuprofen starts to decrease by 120 min., hence the analgesic activity of the standard drug cannot be expected at the end of 120 min. But kashaya even at the end of 180 min showed significant analgesic activity, which indicates that the 't 1/2' of the compound is more.

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