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Evaluation Of Analgesics Activity Of *Angamard Prashman Ghan Vati* And *Kakatinduk Vati* Wsr To Its Anti Nociceptive Action

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, *Medicinal plants are always being a prime source of medication to tackle the chronic ailments. Pain as a universal symptom in all ailments act as a hurdle in the day to day routine work and posed a strong burden over a medical feternity to provide a safe and effective pain killers. Hence an attempt has been made to found out simple and safe remedies from Ayurveda, in this process two drugs are selected from Ayurveda excellence viz. Agnamarda Prashamana Kashaya(AMP) and Kakatiduka Vati (KV). In the present study these two are examined for its analgesic effects implying tail flick method. For comparison purpose a well known non steroidal anti-inflammatory drug Aspirin which comes under Salicylate group of drug was used as standard. It was found that AMP (100mg / Kg) and KV (22.5mg / Kg) were produced significant ($p < 0.01$) analgesic effect. However, there is need for further studies in order to confirm there analgesic effects with more details.*

Key words: Angamarda Prashamana Kashaya, Kakatinduka Vati, Analgesic, Nociceptive

Introduction

Drugs which are in use presently for the management of pain and inflammatory conditions are either narcotics e.g. opioids or non-narcotics e.g. salicylates and corticosteroids e.g. hydrocortisone. All of these drugs present well known side and toxic effects. Moreover synthetic drugs are very expensive to develop since, for the successful introduction of a new product approximately 3000-4000 compounds are to be synthesized, screened and tested where the cost of development ranges from 0.5 to 5 million dollars. On the contrary many medicines of plant origin had been used since long time without any adverse effects. It is therefore essential that efforts should be made to introduce new medicinal plants to develop cheaper drugs[1].Plants represent still a large untapped source of structurally novel compounds that might serve as lead for the development of novel drugs [2,3].

Angamard Prashman Dhasemani as mentioned in Mahakashya group of Charak Samhita is consist of ten drugs as Angamard Prashman(pain killers).[4] Most of them has the properties of Vatahar [5], which is mainly responsible for the pain as mentioned in Ayurveda texts. The Kakatinduk Vati is selected from Ras Tantra Sara and Siddha Prayoga Sanghrah , a renowned text included in the list of schedule I of D& C act. However, no scientific data is available to validate the traditional claim. Therefore the study was undertaken to evaluate the analgesic activity using radiant heat tail flick test in rat models.

Materials and methods

All the raw materials are procured from the NIA, Jaipur, pharmacy and the formulation is prepared as per the indication in classical texts.

The formulation Angamard Prashaman Ghana Vati consists of following ten drugs as per Charak Samhita Sutrasthan.

Table no. 1 FORMULA OF *ANGAMARDPRASHAMAN GHAN VATI* (AMP)

S.No	Name	Latin Name	Part used	Proportion
1	*Vidarikand*	*Pureria tuberosa*	Root	1 part
2	*Prishnparni*	*Ureria picta*	*Panchang*	1 part

3	*Brihtati*	*Solanum indicum*	Root	1 part
4	*Kantakari*	*Solanum xanthocarpum*	*Panchang*	1 part
5	*Eranda*	*Ricinus communis*	Root	1part
6	*Kakoli*	*Lilium polyphyllum*	Root	1 part
7	*Raktchandan*	*Ptrocarpus santalinus*	Heartwood	1 part
8	*Ushira*	*Vettiveria zezunoides*	Root	1 part
9	*Ela*	*Amomum subulatum*	Seed	1 part
10	*Madhuka*	*Glycerriza glabra*	Root	1 part

All the ingredients except *Ela* is subjected to course powder and mixed with 8 times of RO water for formation of *Kwath*. Then when it reduced to ¼ it is double filtered using nylon mesh and cotton cloth. Then again after giving *Mandagni* , when *Ghan* is formed, fine *Churna* of *Ela* is added to avoid loss of aromatic substances. After drying at 60^0 C *Vati* was made.
Kakatinduk Vati contains following drugs as per mentioned in *Rasatantra Sara* & *Siddha Prayoga Sanghrha*

Table no. 2 FORMULA OF *KAKATINDUKA VATI* (KV)

S.No	Name	Latin Name	Part used	Proportion
1	*Kuchala*	*Strychnos nux vomica*	Seed	7 Part
2	*Amalki*	*Emblica officinalis*	Dried fruit	1 Part
3	*Haritaki*	*Terminalia chebula*	Pericarp of fruit	1 Part
4	*Vibhtaki*	*Terminalia belerica*	Dried fruit	1 Part
5	*Shunthi*	*Zingiber officinale*	Rhizome	1 Part
6	*Maricha*	*Piper nigrum*	Dried fruit	1 Part
7	*Pippali*	*Piper longum*	Dried fruit	1 Part
8	*Karpur*	*Cinnamomum camphora*	Resin	1/5 Part
9	*Lobanphool*	*Styrax loban*	Resin	1 Part
10	*Nagavalli*	*Piper betel*	Leaf extract	Q.S

All the contents in table 2 are mixed in the given ratio except *Loban Phool* and *Karpur* and then triturated with 900 ml of *Nagawalli Swaras*. Then *Mardan* was done upto 9 hrs followed by adding of *Loban Phool* and *Karpur* in given ratio and again *Mardan* was done for 3 hrs.

Appropriate suspensions were made in CMC to prepare lower doses for administration according to the body weight of mice.

Tail Flick Response Method:

The analgesic activity was determined by radiant heat tail-flick method in mice. Rats are held in suitable restrainer with tail protruding out. Radiant heat is applied over the tail on a spot with the help of suitable device such as analgesiometre. The time taken by the animal to withdraw the (flick) tail is taken as of reaction time. Tail-flick latency was assessed by the analgesiometer (Inco, India). The strength of the current passing through the naked nicrome wire was kept constant at 5 ampere. The distance between heat source and the tail was 1.5 cm and the application site of the heat on the tail was maintained within 2 cm, measured from the root of the tail. Cut-off reaction time was 10 sec to avoid any tissue injury during the process.

Selection of Animals:

The Wister strain Albino rats of either sex, weighting between 100-200 gm. were selected for the study. They were maintained in the Animal house of NIMS University Medical College, Jaipur and care of laboratory animals was taken as per CPCSEA guidelines before the experiment. The animals were housed in polypropylene cages in the adequately ventilated room. They were fed with pellets of Hindustan Lever Ltd., Mumbai and water given *ad libitum* throughout the course of the study. Lightning was natural sequence being 12 hours light and 12 hours dark cycle at temperature $25^0 \pm 2^0$C.

Method

An analgesiometer was used to record the flicking time of tail [reaction time] of the animals using the heated nichrome wire as the source of heat stimulus. At a certainpoint the tail of each rat is marked with ink. Prior to experiment the initial reaction times of all the rats were noted for three times with an interval of 15 minutes. Those animals failed to show any response were eliminated from the experiment.

Then the animals of each group were administrated with the respective drugs orally. Group 1 was taken as the control group was given 2% CMC solution.

Group 2 was taken as standard group and the standard drug aspirin was given to the animals orally. Group 3 was received the test drug AMP .Group 4 was given test drug KV . The doses were determined on the basis of body weight of the animals. Then the tail flicking time or reaction time of each group was recorded at 0, 30, 60,120 and 180 min.

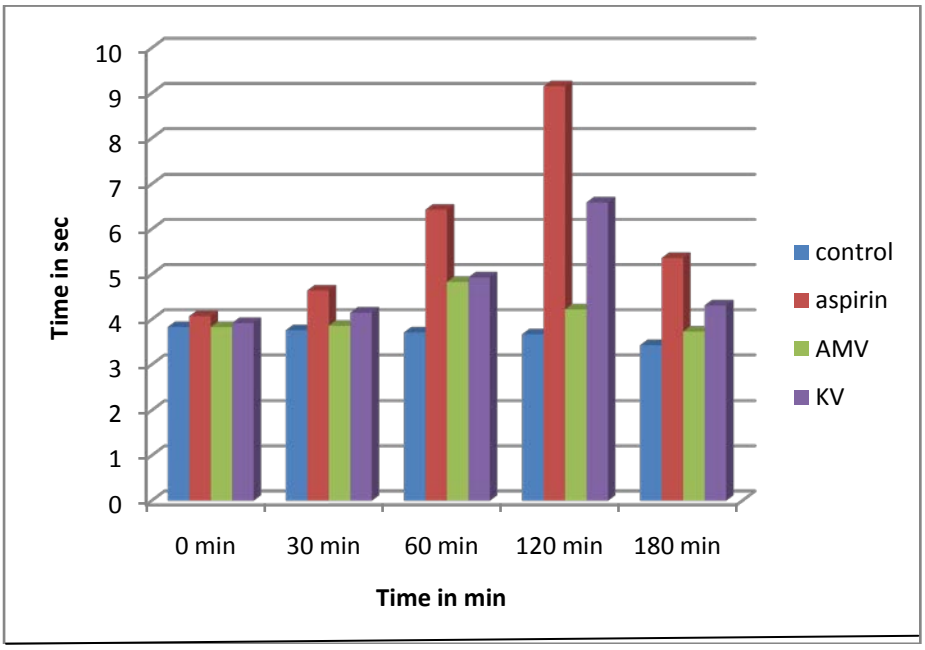
The time was noted down when the rat tried to escape the heat stimulus by flicking its tail. The time interval between the onset of stimulus and the flicking time was taken as the reaction time.

Statistical analysis

All values were expressed as means ± S.E.M. The statistical analysis was performed by using one-way analysis of variance of (ANOVA) followed by the test of Dunnett's Multiple Comparison Test. $P < 0.05$ was considered significant from the control.

Results

The tail flicking time before administering the drug and that at thirty- minute intervals after administering it, were recorded up to 180 minutes.



Comparison of RT of AMP and KV with control and standard drug(aspirin)

Groups	Dose (body weight)	Duration of latency of tail flick response (Sec) recorded at different time intervals					
		Basic Reaction Time	0 min	30min	60min	120min	180min
Control	Q.S	3.58±0.10	3.83 ± 0.05	3.76 ± 0.05	3.71 ± 0.13	3.67 ± 0.10	3.43 ± 0.17
Aspirin	100mg/kg Orally	4.20±0.06	4.07 ± 0.02	4.64 ± 0.20**	6.43 ± 0.17**	9.15 ± 0.22**	5.36 ± 0.09**
AMV	100 mg/kg Orally	3.90±0.06	3.83 ± 0.02	3.86 ± 0.20	4.83 ± 0.11**	4.22 ± 0.008	3.73 ± 0.04
KV	25 mg/Kg Orally	4.15±0.09	3.92 ± 0.02	4.15 ± 0.05	4.93 ± 0.17**	6.59 ± 0.24**	4.31 ± 0.13**

DATA- Mean ± SEM

*= P<0.05, ** = P<0.01 in comparison to control (ONE way ANNOVA dunnett multiple comparison test)

Oral administration of AMP showed a significant analgesic activity (P<0.01) at 60 min after drug administration as compare to control. Though pronlongation was observed at 120 m in but it was found to be statically in- significant. In KV prolongation observed at 60, 120min was found to be statically significant (P<0.01). Aspirin showed significant (P<0.01) antinociception as compare to control.

Discussion

Pain is a condition which is regularly dealt with in daily clinical practice. Hence, any attempt to contribute an easily available analgesic drug from the available classical texts is always accepted without any reluctance.. This attempt is to prove the efficacy of the *Ghan Vati* as a potential analgesic drug and to demonstrate a positive result. Search for safe herbal remedies with potent analgesic activity received momentum recently as the available drugs such as Paracetamol, Aspirin, Nimusulide etc. have toxic effect to the various organs of the body .[6] The result obtained from using the models show that AMP can effectively reduce pain after 1 hr, but persist for short duration. Most of the drugs in *Dashemani* have *Vatahar* properties as well as with *Madhur* rasa and *Ushna Guna* which pacifies *Vata* , the main cause for pain in classics. The *Kakatinduk Vati* has showed its effect after 1st hour of administration and the peak was attained after 2nd hour. Thereafter the effect was started decline. Thus it showed somewhat comparable action with that of the known Aspirin. In the present study the thermal test was selected because of several advantages including the sensitivity to strong analgesics and limited tissue damage.

Conclusion

Studies show that the AMP shows significant analgesic effect but for short duration, so to maintain the effect drug should be re-administrated after 2 hrs.

The clinical applications of these findings must await further studies. Although mechanism involved was not determined in the present study. This is likely to be focus of the forthcoming studies. Pharmaco-dynamics studies should be undertaken through modern techniques to establish the mechanism of the action of compound.

Acknowledgements

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