EXPERIMENTAL EVALUATION FOR ANALGESIC ACTIVITY OF MAMSYADI KWATHA

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ABSTRACT
Siddha Yoga Sangraha of Yadavji Trikamji Acharya, states about Mamsyadi kwatha, an Ayurvedic formulation which is said to be effective in minor mental disorders. The ingredients of Mamsyadi kwatha are Jatamamsi (Nardistachys jatamansi DC), Ashwagandha (Withania somnifera Linn) and Parasika yavani (Hyoscymus niger Linn), in 8:4:1 ratio respectively. The test formulation was subjected to assess its analgesic effect. The model selected for the assessment of analgesic effect was tail flick test, in albino mice. The test formulation possesses analgesic effect, which is mainly due to its component Parasika yavani.

Key words: Mamsyadi kwatha, Jatamamsi, Ashwagandha, Parasika yavani, tail flick test.

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INTRODUCTION
The international association for the study of pain defines pain as the sensory and emotional experience associated with actual or potential tissue damage. Thus pain includes not only the perception of an uncomfortable stimulus but also the response to that perception. Experiencing pain is influenced by a great number of interacting physical, biochemical, physiological, psychological, social, cultural and emotional factors. All of these interactions are dynamic and constantly changing. As a symptom, pain demands instant relief and in practice dramatic relief of pain by drugs highly impresses a layman. Pain receptor organs are distributed throughout the body. Clinically, pain can be considered as:
1. Superficial or cutaneous pain
2. Deep non visceral pain from muscles, joints, ligaments and bones.
3. Visceral pain
4. Referred pain
5. Psychogenic pain or functional pain.

Analgesics are drugs which relieve pain without causing loss of consciousness. Analgesics are classified into opioid and non opioid. Opioid analgesics provide relief from pain and depression of the CNS, both of which are reversed by naloxone. Non opioid analgesics do not interact with opioid receptors and relieve pain without depression of CNS. All analgesics produce adverse effects too. It is necessary to search a modality which eradicates pain without any other adverse effects. Ayurveda, the ancient treasure of health, provides solution for above said problem. Mamsyadi kwatha, an Ayurvedic formulation mentioned in Siddha Yoga Sangraha of Yadavji Trikamji Acharya 1, is said to be possessing very good effect in all mental disorders. Keeping this view in mind it was predicted that Mamsyadi kwatha 2 is having effect on CNS. Here an effort has been made to evaluate the efficacy of Mamsyadi kwatha and its components on tail flick test to elicit analgesic effect. With this idea aforesaid research work was undertaken.

OBJECTIVES
1. To evaluate the analgesic effect of Mamsyadi kwatha.
2. To assess the role of ingredients of Mamsyadi kwatha in its analgesic effect.
MATERIALS AND METHODS

Animals
Swiss albino mice of either sex weighing between 20g – 40g were randomly selected & maintained in the animal house attached to the pharmacology laboratory of I.P.G.A & R.A. They were maintained on ‘Amrut’ brand mice pellets. Both food & tap water were given ad libitum. Animals were exposed to natural day & night cycle. 60-85% of humidity was maintained. The drugs under trial were administered orally with help of a specially prepared catheter.

Grouping
Albino mice were divided into 5 groups each containing 6 mice.
Control group: Mice of this group were administered with 80ml/kg/day of distilled water each.
Jatamansi kwatha group: Jatamansi kwatha of 80ml/kg/day was administered to each mouse of this group.
Ashwagandha group: Ashwagandha kwatha was administered in the dose of 80ml/kg/day for each mouse of this group.
Parasika Yavani group: Each mouse of this group was administered with the decoction of Parasika Yavani in the same dose as stated as above.
Mamsyaadi kwatha group: Mamsyaadi kwatha was administered for each mouse.

Route of administration, duration & dose
Freshly prepared decoction of above mentioned drugs administered orally in a dose of 80 ml per kg per day, with the help of specially prepared catheter. The duration was 7 days for chronic study & one day for acute study.

Statistical analysis
Done by employing student’s t test for paired & unpaired data & also by non parametric methods, A ‘p’ value of less than 0.05% was considered as statistically significant.

Experimental procedure
Experiments were carried with 2 dosing schedules.
1) Acute Study – Test drugs administered one hour prior to experimentation. On the same day experiments were conducted.
2) Chronic Study – Trial drugs were administered for 7 days, on 8th day morning experiments one hour after the administration of test drug.

Test formulation: Mamsyadi kwatha
Reference: Siddha Yoga Sangraha
Ingredients: 1) Jatamansi – 1 part
2) Ashwagandha – 1/4 parts
3) Parasika yavani – 1/8 parts

Preparation of medicine
1) Jatamansi Kwatha: decoction prepared by boiling 1 part of coarse powder of jatamansi in 16 parts of water & reducing into 1/4th part
2) Ashwagandha Kwatha – Prepared as mentioned above
3) Parasika Yavani Kwatha – Prepared as mentioned above
4) Mamsyaadi Kwatha – Prepared as mentioned above
For each experimentation, fresh decoction was prepared. Here 1ml of decoction consists of the water extractable material of 500 mg of the drug. (Tab No. 1)

Experimental model
To determine whether the test drugs posses central analgesic activity or not they were evaluated with radiant heat test. It was done as described by Gujral and Khanna (1956).
This experiment was conducted with the help of "Tail Flick Analgesiometer". The procedure is as follows. The tail of restrained animal was placed on the heated nichrome wire (The intensity of which was maintained at a constant level) in such a manner that it is exposed to the radiant heat of the nichrome wire without actually touching it. The animal tries to avoid the radiant heat by vigorously flicking its tail. The time interval between placing of the tail over nichrome wire and observation of tail flick was considered as reaction time. Significant prolongation of reaction time, one hour after drug administration in comparison to control group values indicated presence of analgesia. For accuracy, four trials were conducted in 15 minutes interval of time.

Observations
Data pertaining to the effect of test drugs on Tail flick response in albino mice during chronic administration is tabulated above. There was an apparent increase in the latency of Tail flick response in JatamamsiP arasika yavani administered group. However it was not statistically significant. However (P<0.05) increase in latency of tail flick response observed in Parasika yavani administered group was found to be statistically significant.(Tab No. 2)

DISCUSSION
On chronic administration, elevation of pain threshold for tail flick response was observed in all the three ingredients and the test drug formulation. However the elevation was significant only in Parasika yavani administered group. This shows that the test drug may produce the central analgesic activity. The exact mechanism of this elevation needs to be evaluated. It may be due to the release of endogenous peptides or direct stimulation of opioid receptors. Modulation of the formation and metabolism of endogenous peptides.
Endorphins/Enkephalins) may also be involved\(^5\). It is also possible that the observed analgesic effect may be due to modulation of non-opioid pathways\(^6\). Further detailed studies would help in arriving at an unequivocal conclusion.

**CONCLUSION**

- Mamsyadi kwatha is having analgesic activity.
- The analgesic effect of Mamsyadi kwatha is mainly due to Parasika yavani an ingredient of it.
- Acute and chronic study of Mamsyadi kwatha on tail flick response test is ideal one to elicit the analgesic activity.

**REFERENCES**


**Table 1: Ingredients, properties and part used**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Sanskrit name</th>
<th>Botanical name</th>
<th>Family</th>
<th>Guna</th>
<th>Part used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jatamansi</td>
<td><em>Nardostachys jatamansi</em>, DC.</td>
<td>Valeria r aceae</td>
<td>Samjna Sihapan</td>
<td>Rhizome &amp; oil</td>
</tr>
<tr>
<td>2</td>
<td>Ashwagandha</td>
<td><em>Withania somnifera</em>, Linn.</td>
<td>Solanaceae</td>
<td>Vishagna Shothahara Ropana</td>
<td>Roots</td>
</tr>
<tr>
<td>3</td>
<td>Parasika yavani</td>
<td><em>Hyoscyamus niger</em>, Linn.</td>
<td>Solanaceae</td>
<td>-</td>
<td>Dried leaves with flowering tops, seeds</td>
</tr>
</tbody>
</table>

**Table 2: Effect of test drugs on "tail flick response" in albino mice Chronic study**

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose ml/Kg</th>
<th>Time of Tail Flick Response (Sec.) Mean ± SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>80</td>
<td>1.28 ± 0.196</td>
</tr>
<tr>
<td>Jatamansi</td>
<td>80</td>
<td>1.94 ± 0.214</td>
</tr>
<tr>
<td>Ashwagandha</td>
<td>80</td>
<td>1.829 ± 0.296</td>
</tr>
<tr>
<td>Parasika yavani</td>
<td>80</td>
<td>1.887 ± 0.109*</td>
</tr>
<tr>
<td>Mamsyadi Kvatha</td>
<td>80</td>
<td>1.84 ± 0.257</td>
</tr>
</tbody>
</table>

*P<0.05

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