



Research Article

ANTI- PYRETIC ACTIVITY OF SRIRAMA RASA IN ALBINO RATS

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*Jwara* appears as an independent disease and also as a *Lakshana* of various diseases. Because of this, it is the common health problem met within medical practice. That is why, Ayurveda gives much importance to *Jwara* and considered *Jwara* as *Sarvarogaadhipati*.

Abnormal food habits, style of living etc. factors disturb *Jatharagni* and health, which leads to *Jwara* and *Vedana*. *Srirama Rasa* is a unique herbo-mineral formulation explained in the *Jwara Chikitsa Prakaranam* of *Bhaishajya Ratnavali* having a multi- dimensional therapeutic action i.e., *Ama jwara*, *Shoola*, *Vishtambha* and *Vata vikaras*. It is a potent formulation having *Shuddha Parada*, *Shuddha Gandhaka*, *ShuddhaJayapala Beeja* and *Maricha* given *Bhavana* with *Dantimoola kwatha*.

**Methodology:** Raw materials were screened and collected and the formulation selected for the present study *Srirama Rasa* was prepared accordingly. Experimental study was conducted in 3 group of animals for Anti-pyretic study. Anti-pyretic study was done by Yeast induced pyrexia method in Albino rats.

**Results:** In Anti-pyretic study, a significant result was observed in standard group and trial group. But in standard group, it was more significant than control & trial group. In trial drug, a significant decrease in rectal temperature was observed from 5<sup>th</sup> to 6<sup>th</sup> hr, while in standard group it was from 2<sup>nd</sup> to 6<sup>th</sup> hr.

**Conclusion:** *Srirama Rasa* has demonstrated significant Anti-pyretic activity. This study has provided evidence base and given scope for clinical research.

**KEYWORDS:** *Srirama Rasa*, *Jwara*, Anti-pyretic activity,

INTRODUCTION

*Ayurveda* is one of the oldest system of medicine in India. The term *Ayurveda* is defined as the science of life. *Ayurveda* is considered as the *Upaveda* of *Atharvaveda* and *Upanga* of *Rigveda*<sup>[1]</sup>. *Brahma Vaivartha Purana* considers *Ayurveda* as fifth *Veda*. According to *Acharya Charaka*, the knowledge of *Ayu* is derived from *Ayurveda*<sup>[2]</sup>.

“*Swastasya swaastya rakshanam aaturasya vikara prashamanam*”

*Ayurveda* is having its own specific motto and specialties. The primary aim of *Ayurveda* is preserving and promoting the health as well as preventing and curing the diseases.

In *Ayurveda*, *Jwara* is considered as ‘the king of all diseases’. *Jwara* is *Pradhana vyadhi* and *Anubandhi vedhana* in many of the diseases. According to *Acharya Charaka*, *Prathyatma Lakshanas* of *Jwara* is *Santapa* of *Deha*, *Mana* and *Indriyas*<sup>[3]</sup>. No other disease is so severe, so complicated and so difficult to treat as *Jwara*. That is

why, *Ayurveda* gives much importance to *Jwara* and considered *Jwara* as *Sarvarogaadhipati*<sup>[4]</sup>.

According to modern science, fever is a symptom of underlying disease. There are many causes for fever but infection is also considered as one of the cause. But according to *Ayurveda*, *Mithya Ahara* and *Vihara* (unwholesome food, physical activities and exposure) leads to aggravation of *Vatadi Doshas* which affects *Amashaya* and mixed up with the *Agni*. It follows the path of *Rasa* and obstructs the channels of *Rasa* and *Sweda*. It suppress the activity of *Pachakagni* and expels the heat out from the site of digestion and spreading it all over the body, and thus causing *Jwara*<sup>[5]</sup>.

In modern science, Paracetamol, Diclofenac Sodium, NSAIDs and many other medicines have been used to treat fever and pain. But they are having various side effects like Dyspepsia, Haemorrhage in GIT, Nausea, Heart burn, Dizziness, Hepatic disorders, Rashes, etc<sup>[6]</sup>.

Number of *Jwarahara* and *Vedanahara* drugs have been mentioned in our Ayurvedic classical texts, *Srirama rasa* is one such simple *Kharaleeya rasayana* formulation explained in the *Jwara Chikitsa Prakaranam* of Bhaishajya Ratnavali found to be more effective in the treatment of fever and pain. *Srirama Rasa* is a unique and potent *Khalvi rasayana* which is having ingredients *Shuddha Parada*, *Shuddha Gandhaka*, *Maricha* and *Shuddha Jayapala beeja* and *Dantimoola kwatha* as the *Bhavana dravya*.

- *Shuddha Parada* (1part)
- *Shuddha Gandhaka* (1part)
- *Shuddha Jayapala beeja* (3parts)
- *Maricha Choorna* (1part)
- *Dantimoola Kwatha* (Q.S.)

And, it is also indicated in several other diseases like *Shoola*, *Vishtambha*, and *Vata vikaras* etc<sup>[7]</sup>. *Rasashastra*, known as the Indian Alchemy, a pharmaceutical branch of Indian system of medicine mainly deals with the metals, minerals etc. and their use in therapeutics.

*Srirama Rasa*, which comes under *Kharaleeya Rasayana*, in which the components of *Srirama Rasa* are expected to be *Agni dipana*, *Ama pachana*, *Shrotoshodhaka*, *Malashuddhikara* etc. These properties may contribute to relieve pyrexia. No anti-pyretic activity works has been carried out on *Srirama Rasa* and it is expected to be potent. In the view to contribute a safe, effective and economical anti-pyretic formulation, the present study was planned.

**Table 2: showing Grouping and Dose fixation in Anti-pyretic study**

Sl.No.	Group	No. of Animals	Treatment	Dose
1.	Disease control	6	Yeast	10ml/Kg
2.	Standard	6	Paracetamol	50mg/Kg
3.	Trial Drug	6	<i>Srirama Rasa</i>	4.5mg/200g

Total 18 Albino rats of either sex weighing between 150 g to 200 g had been taken and divided randomly into three groups, each containing six rats. All healthy Albino rats which was selected for the experiments and kept under fasting for 18 hours, before the commencement of the experiment. Initial normal rectal temperature of all the rats was recorded by using a digital thermometer. Fever was induced by using 20% of Brewer's yeast solution which was injected subcutaneously in Albino rats in the dose of 10ml/kg body weight and was placed in the cages kept for them. Then the rectal temperature of the each rat had been noted 18<sup>th</sup> hour after the injection of Brewer's yeast. After 18th hour of injection of yeast corresponding test drug was administered to respective group. Rats of group first

## MATERIALS AND METHODS

The preparation of test drug i.e., *Srirama Rasa* done from *Rasashala* of Ramakrishna Ayurvedic Medical College, Yelahanka, Bangalore.

**Table 1: Ingredients and quantity used to prepare *Srirama Rasa***

Ingredients	Quantity
<i>Shuddha Parada</i>	15 g
<i>Shuddha Gandhaka</i>	15 g
<i>Shuddha Jayapala beeja</i>	45 g
<i>Maricha Choorna</i>	15 g
<i>Dantimoola kwatha</i>	100ml

The drug which used as standard drug i.e. Paracetamol purchased from standard and reputed firms. Swiss albino rats of either sex weighing between 150-200 g were used for the study. Animals were produced from animal house. Eighteen Albino rats were selected and allotted to three groups of six rats in each group. Six rats were housed in each cage made up of poly-propylene with stainless top grill. The husk was used as bedding material and was changed frequently to protect from infections. Animals were maintained at standard laboratory conditions such as temperature at 23-24<sup>o</sup> C, humidity of 48-63% and 12 hr light and dark cycles. Animals were fed with standard pellet feed supplied by VRK nutrition solution and aqua guard water in polypropylene bottles. The Animal Ethical committee has approved for experimentation on Animals with reference no - (Approval number-Invivo-090).

which was administered with distilled water served as Control. Rats of group 2nd had been administered with paracetamol suspension at the dose of 50mg/kg body wt. by using the feeding syringe to serve as reference Standard. Similarly, rats of group third had been administered with the *Srirama Rasa* (trial drug) dose of OECD 425 guidelines. After administering corresponding drug to each group, hourly rectal temperature of each rat was noted for 6 hours and after 24hours.

## OBSERVATION & RESULTS

After the induction of Baker's yeast solution, all the albino rats were closely observed for their behaviour and symptoms. The observations noted are mentioned below:

1. Increase in temperature was noted in all the rats.
2. Trembling was noted in most of the rats after one hour of the induction of Baker's yeast.
3. Furerected.
4. Face of the rats bent downwards
5. They were less active

All these symptoms found in rats confirmed that they were suffering from hyper pyrexia.

After 18hrs of inducing fever to rats, the respective drugs had given to the rats. After administering corresponding drug to each group, hourly rectal temperature has been noted for 6hrs and after 24hrs and the data is reported.

#### Observation at Zero hour

Here, the rectal temperature was recorded and observed at Zero hour.

**Table 3: Mean values of Rectal Temperature at 0-hr**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	33.22	0.33
Positive control	33.40	0.34
<i>Srirama Rasa</i>	33.50	0.35

#### Observation at One hour

Here, the rectal temperature was recorded and observed at One hour.

**Table 4: Mean values of Rectal Temperature at One hour**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	36.54	0.19
Positive control	34.98	0.51
<i>Srirama Rasa</i>	36.44	0.64

#### Observation of Second hour

Here, the rectal temperature was recorded and observed at Second hour.

**Table 5: Mean values of Rectal Temperature at second hour**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	36.72	0.29
Positive control	34.23	0.48
<i>Srirama Rasa</i>	36.33	0.60

#### Observation at Third hour:

Here, the rectal temperature was recorded and observed at Third hour.

**Table 6: Mean values of Rectal Temperature at third hour**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	36.53	0.20
Positive control	33.47	0.27
<i>Srirama Rasa</i>	35.88	0.64

#### Observation at Fourth hour

Here, the rectal temperature was recorded and observed at Fourth hour.

**Table 7: Mean values of Rectal Temperature at Fourth hour**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	36.10	0.27
Positive control	33.33	0.27
<i>Srirama Rasa</i>	35.68	0.62

#### Observation at Fifth hour

Here, the rectal temperature was recorded and observed at Fifth hour.

**Table 8: Mean values of Rectal Temperature at Fifth hour**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	35.88	0.26
Positive control	33.30	0.27
<i>Srirama Rasa</i>	33.50	0.27

**Observation at Sixth hour**

Here, the rectal temperature was recorded and observed at Sixth hour.

**Table 9: Mean values of Rectal Temperature at Sixth hour**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	35.30	0.25
Positive control	33.25	0.27
<i>Srirama Rasa</i>	33.18	0.30

**Observation after 24 hour**

Here, the rectal temperature was recorded and observed after 24 hour.

**Table 10: Mean values of Rectal Temperature after 24 hrs**

Group	Mean Rectal Temperature (in °C)	SEM
Disease control	33.13	0.36
Positive control	32.97	0.23
<i>Srirama Rasa</i>	32.85	0.28

In test drug group gradual increase in temperature was noted from 1<sup>st</sup> hour to till 3<sup>rd</sup> hour and then gradual reduction in temperature was noted from 4<sup>th</sup> hour to 6<sup>th</sup> hour and 24hr. Significant antipyretic activity was observed from 5<sup>th</sup>, 6<sup>th</sup> hour and till 24hr of drug administration.

In standard drug group gradual reduction in temperature was noted from 3<sup>rd</sup> hour to 6<sup>th</sup> hour and 24hr. Significant antipyretic activity was observed from 3<sup>rd</sup> hour to 6<sup>th</sup> hour and 24hr of drug administration.

*Srirama Rasa* produced very good antipyretic activity, the observed activity was almost similar to that in paracetamol treated group.

**DISCUSSION**

*Srirama Rasa* is a *Khalvi rasayana* with a unique Herbo-mineral combination of drugs to treat *Jwara*. It was found in the *Bhaishajya Ratnavali Jwara Chikitsa Prakaranam*.

Its ingredients include, *Shuddha Parada* (1 part), *Shuddha Gandhaka* (1 part), *Shuddha Jayapala beeja* (3 parts), *Maricha Choorna* (1 part) and *Dantimoola Kwatha* (Quantity Sufficient). With the classical preparation and the properties of the drugs which are present, it shows the *Jwarahara* property. As *Srirama Rasa* is currently indicated and useful in the *Jwara, Shoola* etc. *Vikaras*, the attempt is done for its Anti-pyretic activity.

Antipyretic activity was carried out in rats by yeast induced hyperpyrexia method. In test drug group gradual increase in temperature was noted

from 1<sup>st</sup> hour to till 3<sup>rd</sup> hour and then gradual reduction in temperature was noted from 4<sup>th</sup> hour to 6<sup>th</sup> hour and 24hr. Significant antipyretic activity was observed from 5<sup>th</sup>, 6<sup>th</sup> hour and till 24hr of drug administration. In standard drug group gradual reduction in temperature was noted from 3<sup>rd</sup> hour to 6<sup>th</sup> hour and 24hr. Significant antipyretic activity was observed from 3<sup>rd</sup> hour to 6<sup>th</sup> hour and 24hr of drug administration. *Srirama Rasa* produced very good anti-pyretic activity, the observed activity was almost similar to that in Paracetamol treated group.

**CONCLUSION**

The present study entitled "Anti- Pyretic activity of *Srirama Rasa* in albino rats" has put forth the following concluding statement.

- The formulation *Srirama Rasa* has therapeutic properties *Jwaraghna* was studied with respect to Anti-pyretic.
- *Jwara* is one of the basic pathology in almost all diseases. So *Jwaraghna* properties of the drug have multi systemic actions.
- The Anti-pyretic activity of *Srirama Rasa* was compared with standard drug Paracetamol and Analgesic activity was compared with standard drug Diclofenac Sodium.
- The Anti-pyretic activity of *Srirama Rasa* showed significant Anti-pyretic action when compared to the control group and showed slightly less significant action when compared to the standard drug Paracetamol.

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Images



Fig. no 1: *Shuddha Parada*



Fig. no 2: *Shuddha Gandhaka*



Fig. no 3: *Shuddha Jayapala beeja*



Fig. no 4: *Maricha Choorna*



Fig. no 5: *Kajjali preparation*



Fig. no 6: *Kajjali*



Fig. no 7: *Dantimoola kwatha preparation*



Fig. no 8: *Srirama Rasa preparation*



Fig. no 9: *Srirama Rasa*



Fig. no 10: *Animal Grouping*



Fig. no 11: *Animal Dosing*