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An in vivo study to evaluate the antipyretic activity of *Suryaprabha Gulika* in brewer's yeast induced pyrexia in wistar albino rats

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ABSTRACT

Introduction: *Suryaprabha Gulika* is one of the *Rasayoga,* mentioned in *Sahasrayogam Gulika Prakarana,* prepared by *Khalviya* method of preparation. The formulation is widely practiced clinically and prescribed in conditions of fever associated with *Svasa* and *Kasa.* In the present scenario, validation of any classical concept has emerged to be essential for acceptance by the scientific community. Since antipyretic activity could be elicited in animal models, the present study aims at eliciting the antipyretic activity of *Suryaprabha Gulika* in wistar albino rats using brewer's yeast induced pyrexia method. **Materials and methods:** *Suryaprabha Gulika* was prepared as per the classical reference text, *Sahasrayogam*. Qualitative and quantitative assessment of the prepared drug was carried out. The experimental study to evaluate the antipyretic activity of the formulation was screened using brewer's yeast induced pyrexia method. Statistical test used for evaluation was one way ANOVA followed by Dunett's multiple comparison 't' test as post- Hoc test, if $p<0.05$ was considered significant, using graphpad instat software. **Results:** When compared to the control group, *Suryaprabha Gulika* was found to be effective in bringing about antipyretic action. It also had almost similar efficacy as that of standard drug in bringing about antipyretic action in experimental models. **Discussion:** The antipyretic study of *Suryaprabha Gulika* in wistar albino rats brought out that the drug possesses highly significant antipyretic action.

Key words: *Ayurveda, antipyretic, Sahasrayogam, Suryaprabha Gulika, wistar albino rats.*

INTRODUCTION

Suryaprabha Gulika is a herbomineral formulation having reference in *Sahasrayogam*, *Gulika Prakarana*.

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The formulation consists of 11 ingredients, out of which two are of minerals (*Parada* and *Gandhaka* in the form of *Kajjali*) and 9 herbal ingredients (*Ramatha, Triphala, Trikatu, Yavani* and *Vatsanabha*) and the media for trituration is *Jambira Svarasa*. The formulation is indicated in *Sula*, *Kasa*, *Svasa* and *Mahajvara.*[1] Even though *Suryaprabhā Gulika* is widely practiced clinically and prescribed in conditions of fever, associated with *Svasa* and *Kasa*, the action of the drug remained unexplored.

The objective of pharmacological study is to provide a scientific foundation for better therapeutics and in the *Ayurvedic* context, to reassess the efficacy of the *Ayurvedic* drugs or to standardize drug dose. Many formulations are going out of practice gradually because their role, importance, and efficacy are not

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scientifically documented. In this present scientific era, it is necessary to carry out the animal experimental studies, as it re-validate the efficacy of *Ayurvedic* drugs in living organisms.

Pyrexia is a state when the body temperature tends to rise above the normal range. Fever is a condition wherein pyrexia can be generally observed. Since antipyretic activity could be elicited in animal models, the present study aims at eliciting the antipyretic activity of *Suryaprabha Gulika* in wistar albino rats using brewer's yeast induced pyrexia method. Thus, the study aims at a scientific validation of the antipyretic action of the formulation in experimental models.

Aims and Objectives

1. To analyze the physicochemical properties of *Suryaprabha Gulika*.
2. To experimentally evaluate the antipyretic activity of *Suryaprabha Gulika* in wistar albino rats.

Materials and Methods

1. Preparation of *Suryaprabha Gulika*

Table 1: Ingredients of *Suryaprabha Gulika*

SN	Ingredients	Quantity
1.	*Sodhita Parada*	1 part
2.	*Sodhita Gandhaka*	1 part
3.	*Ramatha*	1 part
4.	*Triphala* (*Haritaki, Vibhitaki, Amalaki*)	1 part
5.	*Trikatu* (*Pippali, Marica, Sunthi*)	1 part
6.	*Yavani*	1 part
7.	*Suddha Vatsanabha*	1/16th part of above ingredients
8.	*Jambira Svarasa*	Q. S for trituration.

Method of preparation

Kajjali was prepared using *Sodhita Parada* and *Sodhita Gandhaka* (1 part each), by means of trituration in the *Khalva Yantra*. The powder of all the herbal ingredients was added one by one, according to the formulation, into the prepared *Kajjali*. *Sodhita Vatsanabha* was added in the quantity of 1/ 16th part of the total ingredients. The trituration of the ingredients was done along with *Jambira Svarasa* for 12 hours. When the mixture was properly ground, pills with the size of one *Gunja* (125 mg) was rolled out.

Dose: 125 mg

Indications: *Sula*, *Kasa*, *Svasa* and *Mahajvara.*

2. Assessing the analytical parameters

Physicochemical analysis of *Suryaprabha Gulika* was carried out.

(a) Organoleptic characters: These includes assessing the colour, odour, state, and taste of the drug. By assessing the organoleptic characters, the basic information of the drug can be identified. The specific characters of a drug, which can be identified by using sense organs are included under this test. The quality of the drug can be inferred up to some extent, with this assessment.

(b) Physicochemical parameters: The physicochemical parameters assessed were: Weight variation test, Friability test, Hardness test, pH (5% solution), Disintegration test, LOD at 110°C, Ash value, Acid insoluble ash, Water soluble ash, Alcohol soluble extractive and Water soluble extractive.[2]

3. Experimental Study (In Vivo)

The study was carried out after obtaining the permission of IAEC. Approval number-SDMCRA/IAEC/AM-R-02 (7-1-2019)

In this study, the antipyretic activity of *Suryaprabha Gulika* was assessed in wistar albino rats by using brewer's yeast induced pyrexia method.

Drugs used

a) Test drug: *Suryaprabha Gulika*

b) Distilled water

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c) Brewer's yeast solution

d) CarboxyMethylCellulose (CMC)

e) Standard drug: Paracetamol IP tablets (Dolo 650)

Equipments used

a) Digital tele thermometer

b) Glass beaker and stirrer

c) Disposable syringes

d) Weighing balance

e) Hand gloves

Preparation of the drug

a) Preparation of 15% brewer's yeast solution: Brewer's yeast was procured from the local market (New Diana Stores, Udupi). 4.5g of yeast + 30ml saline was taken in a small beaker, properly mixed, covered with an aluminium foil and kept in the incubator at 37°C for 40 hours for fermentation.

b) Test drug (*Suryaprabha Gulika*): 22.5 mg drug +100 mg CarboxyMethylCellulose + 20 ml distilled water.

c) Standard drug (Paracetamol IP tablets (Dolo 650) manufactured by Micro labs limited): 200mg drug + 100mg CarboxyMethylCellulose + 20 ml distilled water

d) Control drug: 100mg CarboxyMethylCellulose + 20 ml distilled water

Experimental animals

- Wistar strain albino rats were selected from Animal house of SDM Center for Research in Ayurveda and Allied sciences, Udupi.
- The rats were maintained under strict laboratory conditions of controlled environment, temperature, humidity, light and dark cycles.
- Rats were fed with pellets purchased from Sai Durga stores, Bangalore, India and water ad libitum

Inclusion criteria

- Healthy albino rats of either sex were included in the study.
- Weighing about 150g-250g.

Exclusion criteria

- Less than 150g and more than 250g.
- Pregnant and diseased rats.
- Rats, which are under trail of other experiments.

Numbering and identification

Animals were marked with saturated picric acid solution in water for proper identification.

Table 2: Grouping of experimental animals

Group	Number of animals	Drug	Dose
Control	6	Distilled water + CMC*	10ml/kg body weight
Standard	6	Paracetamol + Distilled water + CMC	100mg/kg body weight
Test	6	*Suryaprabha Gulika* + Distilled water + CMC	11.25mg/kg body weight
* CMC - CarboxyMethylCellulose			

Routes of administration

- Yeast solution was injected through subcutaneous route.
- Test/Standard/Control group drugs were administered through oral route by using rat feeding tube.

Dose fixation

Referring to the table of Paget & Barner's, dose of test drug for the rats were calculated based on the conversion formula:

Human dose × Body surface area ratio convertible factor

Human dose × Surface area factor (0.018) × 5/kg body weight

Rat dose = Human dose × 0.018/200g body weight

Therefore, dosage of

(a) Test drug (*Suryaprabha Gulika*) was

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= 125mg ×0.018×5/ kg body weight

= 11.25 mg/kg body weight

(Human dose of *Suryaprabha Gulika* is taken here as 125mg)

(b) Standard drug (Paracetamol IP tablets (Dolo 650)) = 100mg/kg body weight

(c) Control drug: 10mg/kg body weight

(d) Yeast injection dose: 10mg/kg body weight

Experimental design

- Initial rectal temperature of the animals was recorded.
- Pyrexia was induced by subcutaneous injection of 15% yeast solution in normal saline solution.
- The room temperature was kept at 22–24°C.
- Immediately after yeast administration, food was withdrawn.
- After 18 hours, rectal temperatures were recorded using digital tele thermometer.
- Only those animals in which the rectal temperature raised from 0.5 to 2°C, after the yeast injection were taken to the study.
- The drug (test/standard/control) were administered via oral route through the rat feeding tube.
- The rectal temperature was recorded by using digital tele thermometer for consecutive 1st, 2nd, 3rd, 4th, 5th and 24th hours post dosing.

Evaluation

The basal temperature, rectal temperature 18 hour after induction of pyrexia, and hourly temperature (for 1st, 2nd, 3rd, 4th, 5th, and 24th hours) were recorded using digital tele thermometer for all the three groups. The differences between the temperature values at each time interval were recorded against initial temperature of the same group and compared. The maximum reduction in rectal temperature in the test and standard group, in comparison to the control group was calculated. Further, the results of the test group was compared with the values of standard group.

Statistical Analysis

One way ANOVA followed by Dunett's multiple comparison 't' test as post- Hoc test, if $p<0.05$ was found significant, using graphpad instat software.

Observations and Results

1. Assessment of Analytical parameters

Table 3: Organoleptic characters of *Suryaprabha Gulika*

SN	Parameters	Observation
1.	Colour	Black
2.	Odour	Characteristic of *Hingu*
3.	State	Solid (round balls of 3 to 4 mm diameter)
4.	Taste	Characteristic of its ingredients

Table 4: Physicochemical characters of *Suryaprabha Gulika*

SN	Parameters	Observations
1.	pH (5% solution)	2.93 at 28.5°C
2.	LOD at 110°C	9.93%
3.	Total Ash	6.12% w/w
4.	Acid insoluble ash	0.824% w/w
5.	Water soluble ash	4.46% w/w
6.	Alcohol soluble extractive	12.116%
7.	Water soluble extractive	25.88%
8.	Hardness test	2 kg/cm^2
9.	Friability test	0.14%
10.	Weight variation	Passes the weight variation test.

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		(within the acceptable range of ±7.5% weight variation)
11.	Disintegration test	
	(a) In water	6 hours
	(a) In acid medium	6 hours

2. Experimental Study (In Vivo)

Initially, normal body temperature of all rats on an average was recorded. After the administration of the brewer's yeast, all the animals were observed for their behaviour changes. All the symptoms as mentioned below confirmed that the rats were suffering from fever:

- Temperature of all albino rats increased.
- Trembling is noted after 1 hour of brewer's yeast injection.
- Fur erected.
- Face of all animals bent down.

Observations and results of the study, to evaluate the antipyretic activity of *Suryaprabha Gulika*, are given below in the following tables:

Table 5: Effect of *Suryaprabha Gulika* on brewer's yeast induced pyrexia in wistar albino rats within the groups

Group	Basal temperature (°C)	Rectal temperature (°C) 18hr after yeast induced pyrexia	Rectal temperature measured at the different time intervals					
			1st	2nd	3rd	4th	5th	24th
Control	37.75 ± 0.23	38.51 ± 0.10**	38.6± 0.10	38.73 ± 0.14	38.81 ± 0.11	38.66 ± 0.10	38.41 ± 0.12	38.36 ± 0.14
Standard	37.53 ± 0.08	37.96 ± 0.08*	37.75 ± 0.11	37.2± 0.10**	37.33 ± 0.10**	38.01 ± 0.12	38.93 ± 0.04**	37.61 ± 0.12
Test	37.71 ± 0.15	38.35 ± 0.11**	38.22 ± 0.10	38.07 ± 0.12	37.84 ± 0.06**	38 ± 0.08	37.82 ± 0.10**	37.77 ± 0.10**

Data expressed in MEAN±SEM, *P<0.05, **P<0.01 in comparison to rectal (°C)18 hours after yeast induced pyrexia.

Brewer's yeast injection has shown increased rectal temperature of all the groups i.e., control, standard, test drug groups and was found to be statistically significant while comparing to their basal rectal temperature.

Data shows there was **increase** in rectal temperature of **control group** at 1st h, 2nd h, 3rd h, 4th hour and **decrease** at 5th h and 24th hour when compared to the basal temperature of same group, the observed data was found to be **non-significant**. Data shows there was **non-significant** increase in rectal temperature of **reference standard group** at 4th hour and a **very significant** increase at 5th hour and a **non-significant** decrease at 1st and 24th hour and a **very significant** decrease at 2nd and 3rd hour when compared to the basal temperature of same group. Data shows there was a **non-significant** decrease in rectal temperature of **test group** at 1st h, 2nd h and 4th hour and a **very significant** decrease at 3rd h, 5th h and 24th hour when compared to the basal temperature of same group.

Table 6: Effect of *Suryaprabha Gulika* during 1st hour of temperature

Group	1st hour	% change
Control	38.6±0.10	--
Standard	37.75±0.11**	2.20↓

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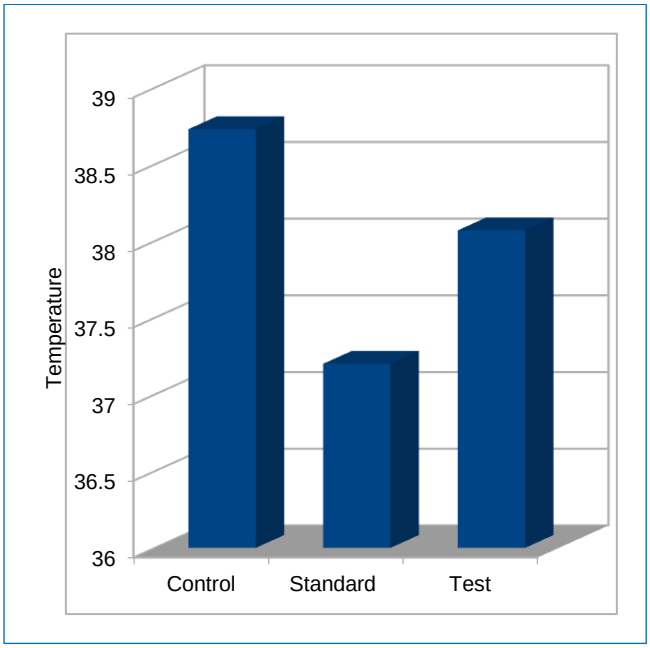
Test	38.22±0.10	0.98↓
Data: MEAN ± SEM **p<0.01		

Graph 1: Effect of *Suryaprabha Gulika* during 1st hour of temperature

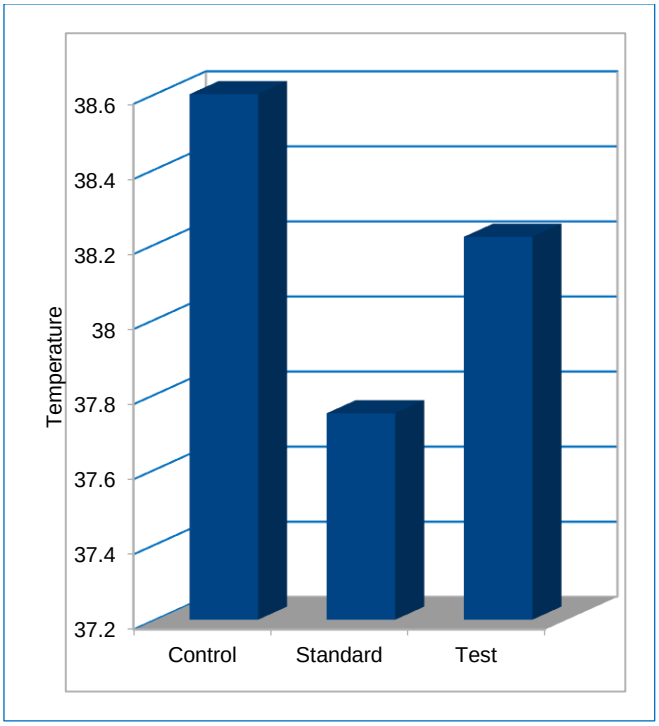


- The data shows that there was decrease in body temperature after first hour of *Suryaprabha Gulika*, when compared to the control group, the observed decrease was found to be statistically non significant.
- The data shows there was decrease in body temperature after 1 hour of reference standard group, when compared to the control group, the observed decrease was found to be statistically very significant.

Table 7: Effect of *Suryaprabha Gulika* during 2nd hour of temperature

Group	2nd hour	% change
Control	38.73±0.14	--
Standard	37.2±0.10**	3.95↓
Test	38.07±0.12**	1.70↓
Data: MEAN ± SEM **p<0.01		

Graph 2: Effect of *Suryaprabha Gulika* during 2nd hour of temperature



- The data shows that there was decrease in body temperature after 2nd hour of reference standard when compared to the control group, the observed decrease was found to be statistically very significant.
- The data shows that there was decrease in body temperature after 2nd hour of *Suryaprabha Gulika* when compared to the control group, the observed decrease was found to be statistically very significant.

Table 8: Effect of *Suryaprabha Gulika* during 3rd hour of temperature

Group	3rd hour	% change
Control	38.81±0.11	--
Standard	37.33±0.10**	3.81↓
Test	37.84±0.06**	2.49↓
Data: MEAN ± SEM **p<0.01		

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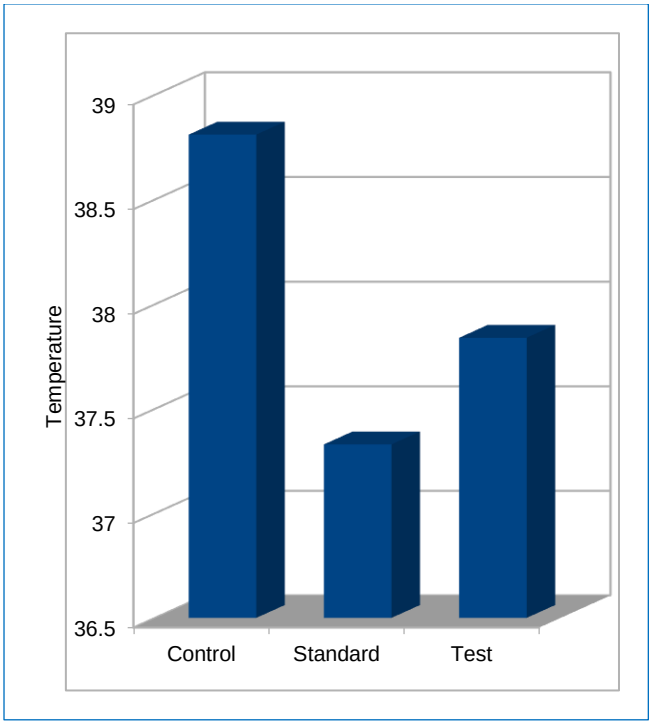
Graph 3: Effect of *Suryaprabha Gulika* during 3rd hour of temperature

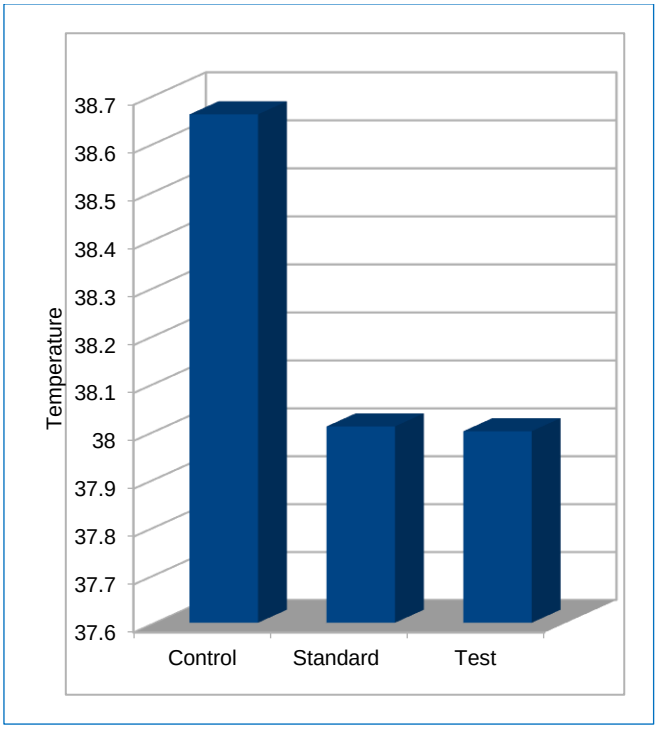


- The data shows that there was decrease in body temperature after 3rd hour of reference standard when compared to the control group, the observed decrease was found to be statistically very significant.
- The data shows that there was decrease in body temperature after 3rd hour of *Suryaprabha Gulika* when compared to the control group, the observed decrease was found to be statistically very significant.

Table 9: Effect of *Suryaprabha Gulika* during 4th hour of temperature

Group	4th hour	% change
Control	38.66±0.10	--
Standard	38.01±0.12**	1.68↓
Test	38±0.08**	1.70↓
Data: MEAN ± SEM **p<0.01		

Graph 4: Effect of *Suryaprabha Gulika* during 4th hour of temperature



- The data shows that there was decrease in body temperature after 4th hour of reference standard, when compared to the control group, the observed decrease was found to be statistically very significant.
- The data shows that there was decrease in body temperature after 4th hour of *Suryaprabha Gulika* when compared to the control group, the observed decrease was found to be statistically very significant.

Table 10: Effect of *Suryaprabha Gulika* during 5th hour of temperature

Group	5th hour	% change
Control	38.41±0.12	--
Standard	38.93±0.04**	1.35↑
Test	37.82±0.10**	1.53↓
Data: MEAN ± SEM **p<0.01		

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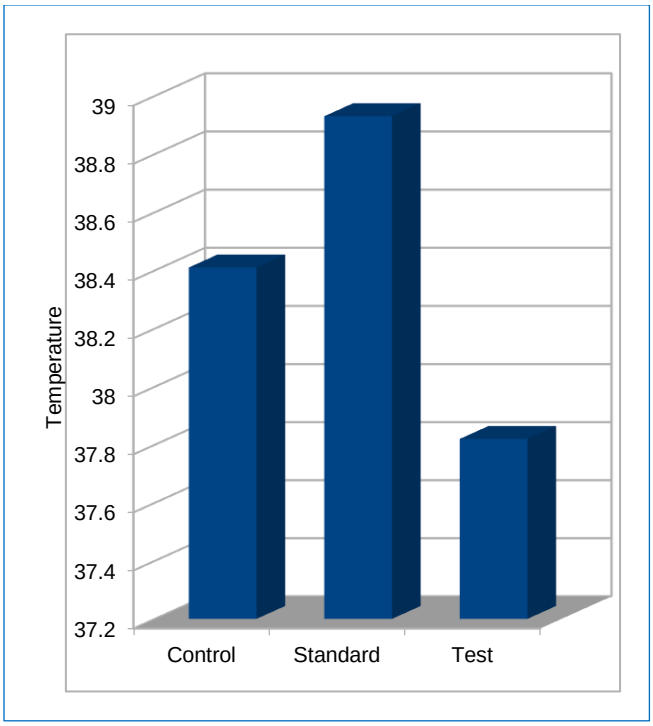
Graph 5: Effect of *Suryaprabha Gulika* during 5th hour of temperature

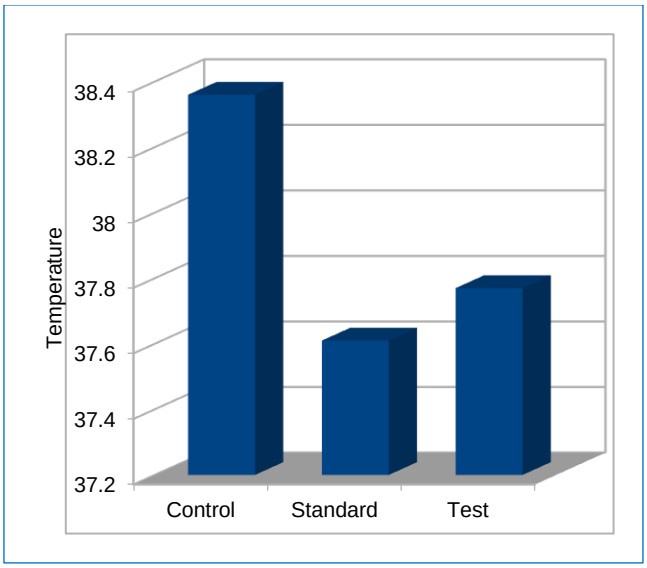


- The data shows that there was increase in body temperature after 5th hour of reference standard when compared to the control group, the observed increase was found to be statistically very significant.
- The data shows that there was decrease in body temperature after 5th hour of *Suryaprabha Gulika* when compared to the control group, the observed decrease was found to be statistically very significant.

Table 11: Effect of *Suryaprabha Gulika* during 24th hour of temperature

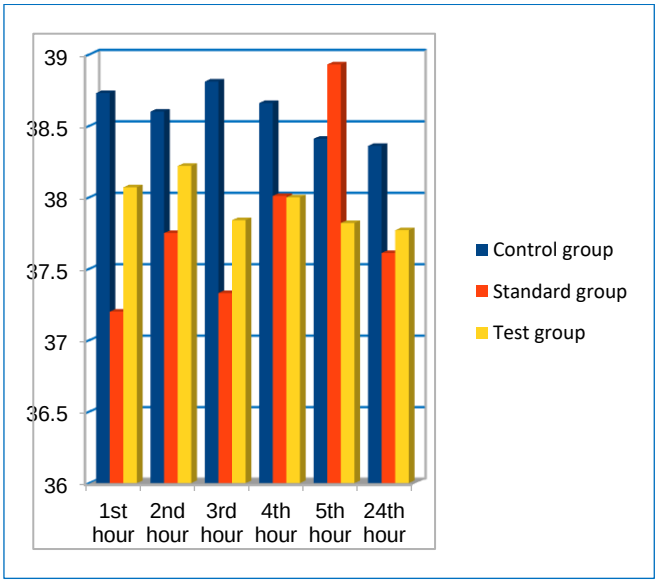
Group	24th hour	% change
Control	38.36±0.14	--
Standard	37.61±0.12**	1.95↓
Test	37.77±0.10**	1.53↓
Data: MEAN ± SEM **p<0.01		

Graph 6: Effect of *Suryaprabha Gulika* during 24th hour of temperature



- The data shows that there was decrease in body temperature after 24th hour of reference standard, when compared to the control group, the observed decrease was found to be statistically very significant.
- The data shows that there was decrease in body temperature after 24th hour of *Suryaprabha Gulika* when compared to the control group, the observed decrease was found to be statistically very significant.

Graph 7: Showing the antipyretic effect of control, standard and test group



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DISCUSSION

Discussion about the antipyretic study

The antipyretic study was screened by using brewer's yeast induced pyrexia method.

Effect of *Suryaprabha Gulika* on brewer's yeast induced pyrexia in wistar albino rats within the groups:

Brewer's yeast injection has shown increased rectal temperature of all the groups i.e., control, standard, test drug groups and was found to be statistically significant while comparing to their basal rectal temperature.

In **control group**, when compared to the basal temperature of same group, the following was observed:

- **Non-significant increase** in rectal temperature at 1st hr, 2nd hr, 3rd hr, 4th hour.
- **Non-significant decrease** in rectal temperature at 5th hr and 24th hour.

In **standard group**, when compared to the basal temperature of same group the following was observed:

- **Non-significant increase** in rectal temperature at 4th hour.
- **Very significant increase** in rectal temperature at 5th hour.
- **Non-significant decrease** in rectal temperature at 1st and 24th hour.
- **Very significant decrease** in rectal temperature at 2nd and 3rd hour.

In **test group**, when compared to the basal temperature of same group the following was observed:

- **Non-significant decrease** in rectal temperature at 1st hr, 2nd hr and 4th hour.
- **Very significant decrease** at 3rd hr, 5th hr and 24th hour.

Table 12: Hourly observations and statistical significance

Hour	Group	Observation	Statistical significance, when compared to control group
1st hour	Test group	Decrease in temperature	Non significant
	Standard group	Decrease in temperature	Very significant
2nd hour	Test group	Decrease in temperature	Very significant
	Standard group	Decrease in temperature	Very significant
3rd hour	Test group	Decrease in temperature	Very significant
	Standard group	Decrease in temperature	Very significant
4th hour	Test group	Decrease in temperature	Very significant
	Standard group	Decrease in temperature	Very significant
5th hour	Test group	Decrease in temperature	Very significant
	Standard group	Increase in temperature	Very significant
24th hour	Test group	Decrease in temperature	Very significant
	Standard group	Decrease in temperature	Very significant

Discussion about the drug

Suryaprabha Gulika is classical herbomineral preparation prescribed for generalized fever and the use is well established in *Ayurvedic* practice. The present study is mainly focused on the Antipyretic effect of *Suryaprabha Gulika*. In this study, the pyrexia was induced by 15% brewer's yeast in the dose of 10ml/kg body weight dose and the rats with rectal temperature above the basal temperature i.e., 37°C were recruited for the study. The pyrexia was achieved after 18h after yeast injection. Thereafter, the rectal

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temperature was measured repeatedly at an interval of 1st, 2nd, 3rd, 4th, 5th and 24th hours.

The data showed that in the control group, there was non-significant decrease in the rectal temperature throughout the experimental reading. The standard drug (Paracetamol) administered rats showed remarkable reduction in the rectal temperature during 2nd and 3rd hours reading and it was found to be statistically significant. The analysis of the results obtained clearly indicates that the test group drug (*Suryaprabha Gulika*) has significant antipyretic activity. When compared with control group, *Suryaprabha Gulika* has remarkable antipyretic activity profile. Comparing to fever temperature produced after 18 hours of yeast administration, *Suryaprabha Gulika* showed more significant reduction in temperature in hourly observation of temperature.

Antipyretic drugs usually make the hypothalamus to override a prostaglandin-induced increase in temperature. Then the body works to lower the temperature and results in reduction in fever. That is, by preventing the PGE2 synthesis, the antipyretic drugs act by blocking the COX-2 enzymes and thereby decrease the body temperature.[3]

The study provides evidence for the presence of antipyretic activity in *Suryaprabha Gulika.* It would be interesting to ascertain the probable mechanism of action which may be due to either interference in the production of heat leading to pyrexia or it may be due to enhanced dissipation of the temperature by the drug. The antipyretic activity may be exhibited due of the presence of secondary metabolites present within the herbal ingredients of the formulation. It is supposed that COX-2 inhibitors from natural sources possess comparatively less side effects than the synthetic drugs which produces toxic effects on different organs of the body.

Probable mode of action of the drug- *Ayurvedic* perspective

Suryaprabha Gulika is a *Khalviya Rasayana* that contains two mineral ingredients (*Parada* and *Gandhaka* in the *Kajjali* form) and nine herbal ingredients (*Ramatha, Triphala, Trikatu, Yavani, Vatsanabha*), triturated in the media of *Jambira Svarasa*.

Jvara is a pathological condition which manifests due to *Vikrita Pitta, Ama* and *Agnimandhya*. *Agni* is impaired in *Jvara*, which in turn vitiates the *Rasa Dhatu*. Obstruction of the *Srotas* is resulted by this impaired *Rasa dhatu*, which circulate all over the *Sarira*.

The *Jvaraghna Karma*, not only includes *Santapa Samana*, but also involves in *Dipana, Pacana, Sroto Sodhana, Pitta Samana, Svedana*, and *Krimighna* actions.

Table 13: *Rasapanchaka* of ingredients of *Suryaprabha Gulika*

SN	Drugs	*Rasa*	*Guna*	*Virya*	*Vipaka*	*Karma*
1.	*Ramatha*	*Katu*	*Tikshna*	*Usna*	*Katu*	*Anulomana Dipana, Hridya, Krimighna, Pacana, Rucya, Vatakapha prasamana*
2.	*Haritaki*	*Madhura, Amla, Katu, Tikta, Kashaya*	*Laghu, Ruksha*	*Usna*	*Madhura*	*Caksusya, Dipana, Hridya, Medhya, Sarvadosaprasamana, Rasayana, Anulomana*
3.	*Vibhitaki*	*Kashaya*	*Laghu, Ruksha*	*Usna*	*Madhura*	*Caksusya, Kesya, Kaphapittajit, Bhedaka, Kriminasana, Kasahara*
4.	*Amalaki*	*Madhura, Amla, Katu, Tikta, Kashaya*	*Laghu, Ruksha*	*Sita*	*Madhura*	*Caksusya, Rasayana, Tridoshajit, Vrishya*

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5.	*Pippali*	*Madhura, Katu, Tikta*	*Laghu, Snigdha*	*Anusna*	*Madhura*	*Dipana, Hridya, Rasayana, Rucya, Vrishya, Recana, Tridosahara, Vatahara*
6.	*Maricha*	*Katu, Tikta*	*Laghu, Ruksha*	*Usna*	*Katu*	*Dipana, Sleshmahara, Rucya, Pittakara, Vatahara, Kaphavatajit, Medhohara Jantunashana*
7.	*Sunthi*	*Katu*	*Laghu, Snigdha*	*Usna*	*Madhura*	*Dipana, Hridya, Anulomana Pacana, Vatakaphapaha, Asmadosahara*
8.	*Yavani*	*Katu, Tikta*	*Laghu, Ruksha, Tikshna*	*Usna*	*Katu*	*Dipana, Pacana, Rucya, Krimighna, Sulahara, Anulomana*
9.	*Vatsanabha*	*Madhura*	*Vikashi, Vyavayi, Yogavahi, Laghu, Ruksha, Usna, Tikshna*	*Usna*	*Madhura*	*Rasayana, Pittasantapakaraka, Tridoshahara*

Moreover, *Vatsanabha* brings about dilatation of the *Svedavaha Srotas* as it possesses diaphoretic action and also enhance the *Jvaraghna* action by its *Vyavayi* property. Probably, the antipyretic action exhibited by *Vatsanabha* may be due to its influence on the circulation and respiration and of its diaphoretic action.[4] *Trikatu* present in the formulation does the *Dipana* action. *Triphala* shows *Rasayana* effect and the *Kostasodhana* is done by the *Ramatha*. *Dipana* and *Pacana* action are exhibited by *Yavani*. *Kajjali* has the property of exhibiting effective action even at the lower doses, which may be attributed by its *Yogavahi* property. It acts as a carrier and enhance the action of the drug, by increasing the potency of even small quantity of herbal ingredients present in the formulation. *Bhavana* with *Jambira Svarasa* further potentiates the formulation with the *Dipana*, *Pacana* and *Rocana Gunas* of *Jambira*. In classical literatures, the inter relation between *Usna Guna* and *Pitta Dosha* is clearly stated. Most of the drugs in the formulation possess *Pitta Samana* property and hence helps to reduce the *Usnatva Guna* of *Jvara*. It can be inferred that all drugs in *Suryaprabha Gulika* possess *Jvaraghna* property.

Figure 1: Brewer's yeast

Figure 2: Preparation of 15% brewer's yeast solution

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Figure 3: 15% brewer's yeast solution after fermentation

Figure 4: Preparation of drug into suspension form

Figure 5: Grouping of animals

Figure 6: Subcutaneous yeast injection

Figure 7: Rat showing symptoms of fever

Figure 8: Administration of drug through rat feeding tube

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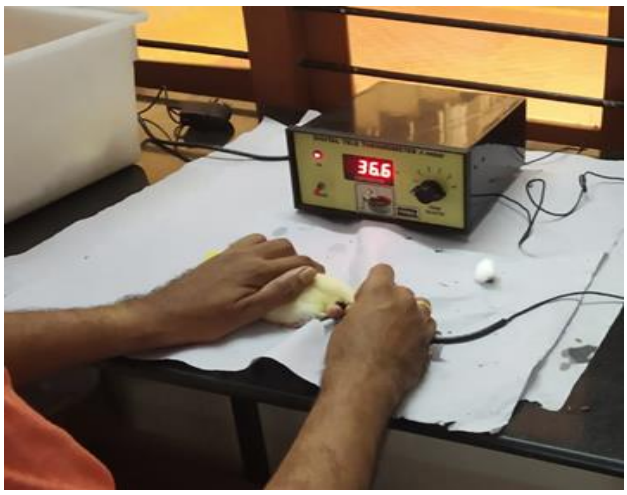

Figure 9: Recording the rectal temperature of the animal

CONCLUSION

Antipyretic activity of *Suryaprabha Gulika* was assessed in wistar albino rats by using brewer's yeast induced pyrexia method. When compared to the control group, the test drug was found to be effective in bringing about antipyretic action. Test drug had almost similar efficacy as that of standard drug in bringing about antipyretic action in experimental models.

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