



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

SRISAIRAM SIDDHA MEDICAL COLLEGE & RESEARCH CENTRE. A REVIEW ON ANTIPYRETIC EFFECT OF BALASANJEEVI MATHIRAI

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ABSTRACT: In Siddha System of Medicine, there are many herbomineral formulations that act effectively on various diseases. This Review elucidates the antiviral, antipyretic and anti-inflammatory potentials of Balasanjeevi Mathirai which is a herbomineral drug that effectively acts on fever/pyrexia/febricity.

KEYWORDS: Fever, Pyrexia, Suram, BalaSanjeevi, Antipyretic, Anti-inflammatory.

INTRODUCTION:

Fever is an elevation of body temperature that exceeds the normal daily variation, in conjunction with an increase in hypothalamic set point. The mechanism of fever or pyrexia appears to be a defensive reaction by the body against infectious disease. It is one of the body's immune responses against microbes by producing pyrogens. In siddha literature, Theriyar has said that the main reason for suram is seedham(aamam) which in turn increases the body heat(pittam) , the predominant expressive form of fever. This article exemplifies the mechanism by which Balasanjeevi Mathirai effectively acts on pyrexia, using its active biochemical potentials.

BALASANJEEVI MATHIRAI:**INGREDIENTS:**

1. PAAL THUTHAM
2. VENKARAM
3. KOROSANAM
4. KOLLUKAAIVELAI VER
5. KADUGUROGINI
6. AGATHI KEERAI SAARU

PREPARATION:

- Take the above ingredients in purified form and powder them.
- Grind equal quantity of the ingredients with agathikeeraisaaru for about 3 hours(One Samam)
- Make the mixture into half green gram size and dry them.

INDICATION:

- If given with water or breast milk 1bd for 3 days cures ganamaantham and all type of diseases.

KOLLUKAIVELAI(Tephrosia purpurea):

- Actions of kollukaivelai includes Febrifuge, Tonic, Laxative, Diuretic, Deobstruent, Cholagogue.
- Decoction of roots given in dyspepsia, diarrhoea, rheumatism, asthma, urinary disorders.
- Pharmacological analysis shows that the drug has got significant acute anti-inflammatory activity, chronic anti – inflammatory activity, analgesic activity and good anti- pyretic activity. Anti-Microbial susceptibility test report shows that the drug has got resistance to all microorganisms.

KADUGUROGINI(Picrorhizkurroa):

- Picrorhiza used for digestion problems including indigestion, constipation, and ongoing diarrhea.

AGATHI KEERAI SAARU(Sesbania grandiflora):

- The whole plant is loaded with pharmacological activities and used for treating anemia, microbial infections, tuberculosis etc. The antioxidant property of Agati is due to the presence of phytochemical constituents making it a potent anticancer and hepatoprotective agent.
- The antipyretic, anti-inflammatory, antioxidant, antimicrobial, thrombolytic and membrane stabilizing properties of Sesbania grandiflora is attributed by the phytochemicals. Recent Scientific studies has revealed potent hepatoprotective, cardioprotective, antiurolithiatic and anxiolytic activities of Sesbania grandiflora.

PAAL THUTHAM(zinc sulphate):

“mutriyakuripunmuraivirananajsennithanap

Patrininravaathampadarkarappan – suthavizhik

Kaasangganampillangkannoikunthantholaiyum

Vaasamiguthuthathaalvazhthu”.

- Zinc sulphate has Antispasmodic, Nutritive, Astringent actions.

KOROSANAI(Capra aegagrus / Bezoar):

- It has antimicrobial potential against enteric pathogens like salmonella species, E.coli, Staphylococcus aureus, bacillus cereus, proteus vulgaris.

VENKARAM(Borax):

- Venkaram (Borax) is basically Sodium borax which offers health benefits like reducing inflammation in the body with its anti-inflammatory property and also acts well against infectious viruses as mentioned in Siddha articles.

RESULTS OF STUDIES CONDUCTED:

1. Acute oral toxicity study: BSM at the dose of 2000mg/kg/po did not exhibit any mortality in rats. As per OECD 423 guidelines the dose is said to be “unclassified” under the toxicity scale. Hence further study with higher doses was not executed.
2. Repeated oral toxicity for 14 days: test drug BSM at the dose of 8mg/kg/po administered for 14 days did not show toxicity in liver functions and hematology. However the drug exhibited significant increase in the uric acid level of kidney(Table 1 and 2). 14 days repeated dosing of the drug did not exhibit change in the serum cholesterol level.
3. Histopathological study: BSM at the dose of 8mg/kg/po daily administered for 14 days did not show evidence of pathological lesions in the tissues tested.
4. Analgesic, Antiinflammatory and Antipyretic studies: BSM at the dose of 8mg/kg/po showed significant analgesic activity in rats (Table 3). BSM also exhibited significant anti-inflammatory activity in both acute and chronic models of inflammation. The anti-inflammatory response of BSM can be comparable to that of diclofenac sodium, a standard non-steroidal anti-inflammatory drug(Table 4,5). BSM showed antipyretic activity in TAB vaccine induced pyrexia in rats. BSM showed antidiarrhoeal activity in castor oil induced diarrhoea.

DISCUSSION: The siddha formulation BSM was tested for its reverse pharmacological and toxicological profiles in the experimental rats. The drug did not exhibit mortality at the dose of 2000mg/kg/po, hence further test was not conducted with higher doses. According to OECD 423 guidelines, the substances did not exhibit mortality at the dose of 2000mg/kg/po and above are “Unclassified” in the toxicity scale.

The repeated oral toxicity study conducted for 14 days with the drug did not exhibit alteration in hematological and liver function tests. However a significant increase in the level of uric acid was observed at the end of 14th day of study. However, these alterations did not reflect on the histopathological study of kidney tissue after 14 days repeated dosing. There no significant changes were observed in cholesterol, body weight, food, water intake and behavioural parameters.

The test drug exhibited significant analgesic and anti-inflammatory activity in acute inflammatory in both acute and chronic inflammatory conditions in rats. The test drug showed maximum anti-inflammatory activity at the end of 4th hour after carrageenan challenge. In chronic model the drug treatment reduced the weight of the granuloma formation which is comparable of that of diclofenac sodium. The result of test drug (8mg/kg/po) was comparable to that of diclofenac sodium (5mg/kg/po). Since the maximum anti-inflammatory activity(reduction in the paw edema volume) was observed at the end of 4th hour, the mechanism of anti-inflammatory activity of test drug may be attributed for its inhibitory activity of

cyclooxygenase(COX) enzymes. BSM showed Antidiarrhoeal effect which can be attributed to its parasympatholytic activity on muscarine receptors like atropine.

TABLE-1: EFFECT OF SIDDHA FORMULATIONS(BSM) ON THE HEMATOLOGICAL PARAMETERS AFTER 14 DAYS REPEATED ORAL DOSING(8MG/KG)

Groups	Hb(gm/100ml)	RBC(mn/cu.m)	WBC(cells/cu.m)	Lymphocytes	Monocytes	Granulocytes
Normal	14.0+/- 0.354	5.81+/- 0.955	5685 +/- 9.434	76.806+/- 3.829	5.390+/- 1.904	18.70 +/- 4.627
BSM (8mg/kg/po)	14.54+/- 0.810ns	5.98+/- 0.642ns	5886+/- 3.653ns	74.67+/- 3.382ns	8.16+/- 1.7ns	19.66 +/- 3.474ns

n=6; values are expressed as mean +/- S.D. followed by students paired 'T'test

ns- non significant when compared to control groups

TABLE-2: EFFECT SIDDHA FORMULATION(BSM) ON BIOLOGICAL MARKERS OF LIVER AND KIDNEY AFTER 14 DAYS REPEATED ORAL DOSING (8mg/kg/po)in rats.

Groups	AST(IU/L)	ALT(IU/L)	Cholesterol (mg/dl)	Urea (mg/100ml)	Uric acid(mg/100ml)
Normal	70.24+/- 0.273	30.40+/- 0.831	45.09+/- 0.397	29.56+/- 0.637	2.98+/-0.650
BSM(8mg/kg/po)	76.95+/- 5.952ns	37.91+/- 2.267ns	42.99+/- 0.527ns	39.30+/- 0.75**	4.81+/-0.635ns

n=6; values are expressed as mean +/- S.D. followed by students paired 'T'test

ns- non significant when compared to control groups

**p<0.05 as compared with control

TABLE-3: ANALGESIC ACTIVITY OF BSM USING TAIL NICK METHOD

Groups	Paw licking response(Sec)			
	0 min	30 min	60min	120 min
Control	5.56+/-0.96	5.86+/-0.96	5.76+/- 0.67	5.86+/-0.53
BSM (8mg/kg/po)	5.66+/-0.206ns	6.92+/-0.678***	7.66+/-0.516***	8.65+/-1.52***

n=6; values are expressed as mean +/- S.D. followed by students paired 'T'test

ns- non significant when compared to control groups

**p<0.001 as compared with control

TABLE-4: ANTIPYRETIC ACTIVITY OF BSM USING DIGITAL THERMOMETER

Groups	Rectal temperature(degree Celsius)				
	0min	30min	60min	120min	240min
control	35.90+/-1.18	37.23+/-1.24	38.27+/-0.34	37.20+/-1.08	36.46+/-0.88
Testdrug BSM(8mg/kg)	35.50+/-0.65	37.01+/-0.90	36.29+/-0.72**	35.43+/-0.388*	35.04+/-0.51*
Standard (Dic.sodium 5mg/kg/po)	35.80+/-0.97	36.96+/-0.95	35.87+/-0.65***	35.65+/-0.60*	35.42+/-0.52*

n=6; values are expressed as mean +/- S.D. followed by students paired 'T'test

ns- non significant when compared to control groups

**p<0.001 as compared with control

CONCLUSION:

As all the individual ingredients has scientifically proven antipyretic and anti-inflammatory actions, when integrated as a single Siddha Medicine i.e. BalasanjeeviMathirai it becomes efficacious against many infectious microbes. Thus this indicates the Grandiose of Siddha Medicines which has the individual significance in the choice of drugs against various diseases.

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