



**A COMPARATIVE CLINICAL EVALUATION OF BHARANGYADI KWATH AND
GHANVATI IN THE MANAGEMENT OF VISHAM JWARA (MALARIA)**

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ABSTRACT

Malaria is a protozoal disease transmitted by the Anopheles mosquito, caused by minute parasitic protozoa of the genus Plasmodium, which infect human and insect hosts alternatively. There are four species of the genus plasmodium responsible for the malaria parasite infections that commonly infect man, *P.falciparum*, *P.vivax*, *P.malariae* and *P.ovale*. The most important of these is *P.falciparum* because it can be rapidly fatal and is responsible for the majority of malaria related deaths. Malaria effects mainly poor, underserved and marginalized populations in remote rural areas which are characterized by inadequate control measures and limited access to health care. Higher malaria prevalence has been reported among ethnic and tribal groups living in remote forested and border areas. Treatment for Malaria is primarily aimed at personal protective measures that prevent mosquitoes from biting and transmitting malaria, chemo-prophylaxis, anti-malarial drug of choice and blood schizonticides are the first-line drugs for the treatment of malaria. In *Ayurveda*, the symptoms, etiopathogenesis of Malaria resembles with *Visham Jwara*. Treatment includes administration of *Shodhan Karma* and certain *Shaman Yogas*. The crude drugs of *Bharangyadi* prepared in the form of decoctions and *Ghanvati* are found to be useful in treating *Vishamjwara*, as the active principals contained within them are found to have anti-pyretic, anti-bacterial, anti-emetic, digestive, hepato-protective and laxative properties. Total 100 patients diagnosed as *Vishamjwara* (Malaria) of any socio-economic status, age group of 20-60 years and irrespective of sex were randomly divided in two groups. The drugs *Bharangyadi Kwath* and *Bharangyadi Ghanvati* were orally given for one month of duration. *Bharangyadi Kwath* and *Bharangyadi Ghanvati* both are very effective, safe and good result yielding drugs for treatment of *Vishamjwara* (Malaria) as they are – *Vatakaphashamak*, *Deepan*, *Pachan*, *Amapachan*, *Jwarangna*, *Trishnahar*, *Krimighna*, *Rasayan* easily available, cheaper and with no side and adverse effect. The outcome revealed a better therapeutic efficacy of *Bharangyadi Kwath* than *Bharangyadi Ghanvati* in *Vishamjwara* (Malaria).

KEYWORDS: *Ayurveda*, *Bharangyadi Ghanvati*, *Bharangyadi Kwath*, Malaria, *Vishamjwara*.

INTRODUCTION

Malaria is a protozoal disease transmitted by the Anopheles mosquito, caused by minute parasitic protozoa of the genus Plasmodium, which infect human and insect hosts alternatively. There are four species of the genus plasmodium responsible for the malaria parasite infections that commonly infect man, *P.falciparum*, *P.vivax*, *P.malariae* and *P.ovale*. The most important of these is *P.falciparum* because it can be rapidly fatal and is responsible for the majority of malaria related deaths. Malaria is a febrile illness characterized by fever and related symptoms. However it is very important to remember that malaria is not a simple disease of fever, chills and rigors. Malaria continues to pose a major public health threat in India, Particularly due to *P. falciparum* which is proem to

complications. In India about 27% population lives in malaria high transmission (1 Case/ 1000 Population) areas and about 58% in low transmission (0-1 case/1000 population) Areas. Malaria affects females and males equally. Children of all ages living in non-malarious areas are equally susceptible to malaria. People of all races are affected, with some exceptions.

Malaria effects mainly poor, underserved and marginalized populations in remote rural areas which are characterized by inadequate control measures and limited access to health care. Higher malaria prevalence has been reported among ethnic and tribal groups living in remote forested and border areas.

Malaria has demonstrated the relationship between health and socio-economic development. It is generally accepted that malaria has disappeared from most developed countries as a result of socio-economic development. The ill-ventilated and ill-lighted house provide ideal indoor resting place for mosquitoes, malaria is acquired in most instances by mosquito bites within the house. India's geographic position and climatic conditions had been, for long, favorable to the transmission of malaria. It is a seasonal disease; the maximum prevalence is from July to November.

Temperature affects the life cycle of the malaria parasite. The optimum temperature for the development of the malaria parasite in the insect vector is between 20°C to 30°C (68°F to 86°F) the parasite ceases to undergo development in the mosquito if the mean temperature i.e. below 16°C temperature and higher than 30°C lethal to parasite. A relative humidity of 60% is considered necessary for mosquitoes to live their normal span of life. When relative humidity is high, mosquitoes are more active and they feed more voraciously. If the humidity is low, mosquitoes do not live long.

In *Ayurveda*, the symptoms, etiopathogenesis resembles with *Vishamjwara*. *Vishamajwara* is irregular (inconsistent) in its *Arambha* (nature of onset commitment), *Kriya* (action production of symptoms) and *Kala* (time of appearance) and possesses *Anushanga* (persistence for long periods). *Bahya* (external) as *Jeevanu* (parasite or microbes), *Mithya Ahara Vihara* (defective food and habits) and the internal factors are vitiated *Dosha* and *Dushya* are causes for *Vishamajwara*. Treatment includes *Langhan*, *Vaman*, *Virechan*, *Basti*, *Anjana*, *Dhupana* and *Shamanaushadhi* comprises with *Kwath*, *Pana*, *Churna*, *Ghrita*, *Asav-arista* and *Krimighna* drugs. In *Yogratnakar* a decoction of the *Bharangyadi Kwath* is recommended for the treatment of *Vishamjwara*. It is a combination of *Jwaranghna* and *Krimighna* drugs. *Bharanghi* and *Kiratatikta* are proved as *Vishamjwaraghna*. *Guduchi*, *Parpatak* and *Bruhati* are having *Jwaranghna* properties. *Shunthi* and *Pippali* are used as *Amapachana*. *Mustak* is used as *Trishnahar* and *Krimighna*. *Dhamasa* is having *Dahaprashaman* and *Kustha* is having *Raktashodhak* Property. The combination of these drugs shows the *Vishamjwaraghna* properties.

Decoctions have some disadvantages, such as the difficulties in ensuring quality control of the herbal ingredients, the time and inconvenience they required to prepare, the practical problems relating to their transportation and storage, the difficulty in ensuring adequate quality of prepared decoction and the requirement to consume a large volume of unpleasant tasting medicine. Tablets are convenient to swallow, easier dosage forms, easy to ensure quality control, convenience in preparation, storage and their transportation.

The aim of this clinical study was to evaluate the effectiveness of *Bharangyadi kwath* in comparison with *Bharangyadi Ghanvati* in the cases of *Vishamjwara* (Malaria).

OBJECTIVES

- Conceptual study of *Vishamjwara* with special reference to Malaria.
- To evaluate the therapeutic efficacy of herbal formulations of *Bharangyadi* drugs in *Vishamjwara*.
- Comparative study of *Bharangyadi Kwath* and *Bharangyadi Ghanvati* in *Vishamjwara*.

Methodology of the research work

The research study entitled "A Comparative Clinical Evaluation of *Bharangyadi Kwath* and *Ghanvati* in the management of *Vishamjwara* (Malaria) was an observational clinical trial done with herbal formulations of *Bharangyadi Yoga*.

Methods of collection of Data

- A clinical study of patients attending the OPD was made and patients fulfilling the criteria of diagnosis as per the research paper were selected for the study.
- A clinical evaluation of patients was done by collection of data through information obtained by history, physical examination and laboratory tests including Malaria Parasite test.
- The data which were obtained by the clinical trial will be summarized and analyzed through statistical measures.

Inclusion Criteria

- Patients with classical features of *Vishamjwara* explained in classical texts.
- Patients of any socio-economic status, both sexes and all ethnic origins.
- Patients with age group of 20-60 years.
- Peripheral smear test for Malaria Parasite - Positive.

Exclusion Criteria

- Patients with uncontrolled metabolic and other systemic disorders.
- Psychiatric illness and pregnant women.
- Patients having cerebral Malaria

Criteria for Selection of Drug

Bharangyadi kwath has been mentioned in the treatment of *Vishamjwara*. The crude drugs of *Bharangyadi* prepared in the form of decoctions and *Ghanvati* are found to be useful in treating *Vishamjwara*, as the active principals contained within them are found to have anti-pyretic, anti-bacterial, anti-emetic, digestive, hepato-protective and laxative properties. The raw drugs are easily available and low cost compared to other therapy. Hence, these drugs were selected for research study.

Method of preparation

Bharangyadi Kwath- The crude drugs of Bharangyadi Yoga were collected and added water in proportion of 1:4, boiled until ¼ remaining. Dose – 40 ml BD.

Bharangyadi Ghanvati – The decoction of *Bharangyadi* was made and heated until bolus formation, and then tablet was prepared. Dose – 1 gram.

Anupan - Luke warm water.

Route of Administration - Oral

Duration – One month.

Diagnostic Criteria

An elaborate case paper incorporating the points of history taking and physical examination was prepared. It mainly emphasized on signs and symptoms of *Vishamjwara* (Malaria). Routine laboratory investigation like Hb%, TLC, DLC, ESR, Blood Sugar (Random), Peripheral smear for Malaria Parasite and Urine examination was made to rule out other pathological conditions.

Diet Regimen - While prescribing the diet of the patients, concept of *Pathya-Apathya* related to *Jwara* was kept in mind; light diet was advised as per the status of Agni.

Research Design

Selected patients were randomly divided into two groups consisting of 50 patients in each group excluding dropouts with pre, mid and post test study design.

1. Group A treated with *Bharangyadi kwath*
2. Group B treated with *Bharangyadi Ghanvati*

Criteria for Assessment

The assessment was made before, during and after the treatment on scoring of cardinal signs and symptoms of *Vishamjwara*. Results were analyzed statistically as per the assessment chart. Scoring pattern was developed according to severity of symptoms. (Severe – 3, Moderate – 2, Mild – 1, Absent – 0).

Presenting Symptoms

1. *Aniyamita Jwara*
2. *Shirshool*
3. *Aruchi*
4. *Vepan*
5. *Chardi*
6. *Parshvashool*
7. *Tandra*
8. *Anidra*
9. *Yakritvridhhi*
10. *Pleehavridhhi*

Associate Symptoms

1. *Angagaurav*
2. *Trishna*
3. *Pralap*
4. *Glani*

5. Drava Mala Pravritti

Assessment of total effect: The total effect of therapy was assessed as;

Assessment	Score
Complete cure	100%
Marked Relief	75-99%
Moderate Response	50 to 75%
Mild Improvement	25-50%
No response	0-25%

OBSERVATION

The effect of *Bharangyadi Yoga* was studied in 100 patients suffering from *Vishamjwara* (Malaria), fulfilling the inclusion criteria. The observations were as follows: Maximum number of patients were obtained in the age group of 31-40 years that is 43% followed by 30% patients in the age group of 41-50 years, 14% patients in the age group of 20-30 and 13% patients in the age group of 51 to 60 years. Male patients were 55% and female patients were 45%. Most of the patients 29% were Housewives and 24% were manual labors and the maximum numbers of patients 53% were from Middle income group. Most of the patients 65% were taking mixed type of diet. 57% of patients were having *Mandagni* and 39% were having *Mridu Kostha*. 44% patients were of *Satata* type, 20% *Santata*, 17% *Annedushkya* and 19% having *Tritiyak* type of *Vishamjwara*.

RESULTS

The drugs *Bharangyadi Kwath* and *Bharangyadi Ghanvati* provided a highly significant ($P < 0.001$) effect on the symptom; *Aniyamita Jwara*, *Shirshool*, *Aruchi*, *Vepan*, *Chardi*, *Parshvashool*, *Tandra* and *Anidra* in both the groups. In *Yakritvridhhi* and *Pleehavridhhi* the treatment showed not significant ($P > 0.05$) effect in both groups. In associate symptoms *Angagaurav*, *Trishna*, *Pralap* and *Glani* the treatment showed highly significant ($P < 0.001$) effect in both the groups. In *Drava Mala Pravritti* the treatment showed more significant ($P < 0.01$) effect in Group A and not significant ($P > 0.05$) in Group B.

The relief percentage in individual symptoms of *Vishamjwara* (Malaria) in both the groups revealed a better therapeutic efficacy of *Bharangyadi Kwath* than *Bharangyadi Ghanvati*. The overall assessment in Group A, 24% patients got complete cure, 20% were showed marked relief and 56 were showed moderate response. In Group B, 26% patients got complete cure, 14% were showed marked relief, 50% were showed moderate response and 10% were showed mild improvement after completion of the treatment.

Effect of drugs on symptoms of 50 patients of Vishamjwara (Malaria) (Group A)

Symptoms	Mean		Mean Diff.	Relief %	SD	SE	‘t’	P
	BT	AT						
Aniyamita Jwara	2.52	0.60	1.92	76.19	0.40	0.06	19.21	<0.001
Shirshool	2.34	0.52	1.82	77.77	0.48	0.07	18.50	<0.001
Aruchi	2.46	0.48	1.98	80.48	0.47	0.07	18.90	<0.001
Vepan	1.66	0.34	1.32	79.51	0.94	0.13	7.38	<0.001
Chardi	1.52	0.34	1.18	77.63	0.92	0.13	6.63	<0.001
Parshvashool	0.90	0.20	0.70	77.77	0.89	0.13	4.61	<0.001
Tandra	0.92	0.18	0.74	80.43	0.92	0.13	4.61	<0.001
Anidra	2.12	0.44	1.68	79.24	0.68	0.10	11.58	<0.001
Yakritvridhhi	0.22	0.12	0.10	45.45	0.30	0.04	1.17	>0.05
Pleehavridhhi	0.30	0.16	0.14	46.66	0.35	0.05	1.50	>0.05

Effect of drugs on symptoms of 50 patients of Vishamjwara (Malaria) (Group B)

Symptoms	Mean		Mean Diff.	Relief %	SD	SE	‘t’	P
	BT	AT						
Aniyamita Jwara	2.48	0.76	1.72	69.35	0.53	0.08	16.20	<0.001
Shirshool	2.38	0.64	1.74	73.10	0.52	0.08	15.91	<0.001
Aruchi	2.52	0.58	1.94	76.98	0.55	0.08	17.34	<0.001
Vepan	1.84	0.44	1.40	76.08	0.86	0.12	7.79	<0.001
Chardi	1.60	0.34	1.26	78.75	0.92	0.13	7.01	<0.001
Parshvashool	0.94	0.22	0.72	76.59	0.88	0.12	4.34	<0.001
Tandra	0.88	0.18	0.70	79.54	0.95	0.13	4.18	<0.001
Anidra	2.00	0.48	1.52	76.00	0.79	0.11	8.96	<0.001
Yakritvridhhi	0.14	0.10	0.04	28.57	0.20	0.03	0.52	>0.05
Pleehavridhhi	0.26	0.14	0.12	46.15	0.33	0.05	1.34	>0.05

Effect of drugs on associate symptoms of Vishamjwara (Malaria) (Group A)

Symptoms	Mean		Mean Diff.	Relief %	SD	SE	‘t’	P
	BT	AT						
Angagavurav	1.76	0.32	1.44	81.18	0.81	0.11	9.52	<0.001
Trishna	2.28	0.40	1.88	82.45	0.52	0.07	18.96	<0.001
Pralap	1.08	0.20	0.88	81.48	0.85	0.12	5.74	<0.001
Glanī	1.58	0.26	1.32	83.54	0.89	0.13	8.05	<0.001
Dravamala pravritti	0.44	0.10	0.34	77.27	0.52	0.07	3.52	<0.01

Effect of drugs on associate symptoms of Vishamjwara (Malaria) (Group B)

Symptoms	Mean		Mean Diff.	Relief %	SD	SE	‘t’	P
	BT	AT						
Angagavurav	1.80	0.40	1.40	77.77	0.78	0.11	9.26	<0.001
Trishna	2.22	0.44	1.78	80.18	0.55	0.08	19.27	<0.001
Pralap	0.98	0.22	0.76	77.55	0.87	0.12	4.72	<0.001
Glanī	1.62	0.30	1.32	81.84	0.89	0.13	7.91	<0.001
Dravamala pravritti	0.28	0.10	0.18	64.28	0.44	0.06	1.96	>0.05

Table 2: Effect of drugs on Blood Examinations

Parameters	Group	BT	AT	Diff.	SD	SE	‘t’	P
MP test	A	1.00	0.26	0.74	0.44	0.06	11.81	<0.001
	B	1.00	0.42	0.58	0.50	0.07	8.23	<0.001
Hb%	A	13.09	13.58	0.49	0.37	0.05	1.94	>0.05
	B	12.41	12.88	0.47	0.36	0.05	1.56	>0.05
ESR	A	15.04	9.24	5.80	3.30	0.47	7.13	<0.001
	B	14.42	9.00	5.42	1.47	0.21	8.44	<0.001
TLC	A	7038	6917	121	82.74	11.70	0.97	>0.05
	B	6988	6858	129	89.47	12.65	1.08	>0.05
Neutrophil	A	58.38	63.06	4.68	2.66	0.38	5.82	<0.001
	B	59.06	63.30	4.24	2.65	0.37	4.96	<0.001

Lymphocyte	A	34.82	29.98	4.84	2.87	0.41	6.26	<0.001
	B	34.28	29.64	4.64	3.08	0.43	5.66	<0.001
Eosinophil	A	4.32	5.20	0.88	0.98	0.14	4.43	<0.001
	B	4.12	5.28	1.16	1.04	0.15	6.07	<0.001
Monocyte	A	2.48	1.76	0.72	0.54	0.08	5.81	<0.001
	B	2.54	1.78	0.76	0.66	0.09	5.74	<0.001
Blood Sugar (Random)	A	107.60	120.20	12.60	4.11	0.58	5.27	<0.001
	B	101.36	112.02	10.66	2.54	0.36	4.23	<0.001

Effect of drugs on Temperature

Mean	Mean of Temperature (in degree Fahrenheit)				
	BT	7 Days	14 Days	21 Days	AT
A	102.41	101.49	100.51	99.55	98.64
B	102.25	101.42	100.50	99.62	98.76

Overall effect of *Bharangyadi Yoga* in 100 patients of *Vishamjwara* (Malaria)

Result	Number of Patients		Percentage	
	Group A	Group B	Group A	Group B
Complete Cure	12	13	24%	26%
Marked Relief	10	07	20%	14%
Moderate Response	28	25	56%	50%
Mild Improvement	00	05	0	10%

DISCUSSION

Jwara is the king of all diseases and *Ayurveda* mentioned as the synonym of the disease or a febrile condition. It afflicts body, mind and sense organs, regulates the well being of life. The disease *Vishamajwara* is included under the *Jwara Roga*. *Vishamajwara* is a *Sannipataja Jwara*, a most popular *Ayurvedic* term in turn of modern medical terminology co-related to malarial fever, is a protozoan disease caused by genus *Plasmodium* and transmitted to man by certain species of infected female *Anopheles* mosquito. It is characterized by *Visamarambha* (irregular onset) *Visama kriya* (alternative feeling of hot and cold) and *Visamakala* (irregular duration of sufferings) of *Jwara*. The major cardinal symptoms are Fever with chill and rigor. The other symptoms are Headache, dizziness or vertigo, with or without fever, may present with altered behavior, mood changes, hallucinosis or even acute psychosis.

Bharangyadi Kwath is prepared from ten crude herbal drugs. The majority of drugs are *Tikta*, *Katu* and *Kashaya Rasatmaka*. *Tikta Rasa* is *Pitta Kapha Shamak*. *Katu Rasa* is *Amapachak*. Hence combination of these drugs having *Tikta* and *Katu Rasa* are useful in *Vishamjwara*. In *Bharangyadi Kwath* 60% drugs are having *Ushna Veerya*. Thus *Sweda-avarodh* is pacified by *Ushna Veerya*. *Bharangi* and *Kiratiktika* are having *Vishamjwaraghna prabhava*. *Guduchi*, *Parpatak* and *Bruhuti* are having *Jwaraghna* properties. *Shunthi* and *Pippali* are used as *Amapachana*. *Mustak* is used as *Trishnahar* and *Krimighna*. *Dhamasa* is having *Dahaprashaman* and *Kustha* is having *Raktashodhak* Property. The combination of these drugs causes potent anti-pyretic, anti-bacterial, anti-emetic, digestive, hepatoprotective and laxative properties.

Bharangyadi Kwath is bitter having unpleasant taste, difficult to prepare daily, difficult to ensure quality control and inconvenient for administration. *Bharangyadi Ghanvati* tablet is convenient to take, easy dosage forms, easy to ensure quality control, convenience in preparation, storage, transportation and their self life should be increased.

Bharangyadi Kwath i.e. Group A provided Complete cure in 24%, marked relief in 20% and Moderate response in 56% of the patients. Whereas *Bharangyadi Ghanvati* i.e. Group B showed Complete cure in 26%, marked relief in 14%, Moderate response in 50% and mild improvement in 10% of the patients.

Both group shows significant improvement in the subjective and objective parameters. *Bharangyadi Kwath* i.e. Group A provided best relief in comparison to *Bharangyadi Ghanvati* i.e. Group B.

CONCLUSION

The following conclusions can be drawn from the observations of the present study:

1. *Bharangyadi kwath* and *Bharangyadi Ghanvati* brought out a highly significant result in symptoms of *Vishamjwara* (Malaria).
2. The clinical study shows highly significant result with subjective and objective parameters suggesting that *Bharangyadi Kwath* and *Bharangyadi Ghanvati* are effective in the management of *Vishamjwara* (Malaria).
3. The drugs *Bharangyadi Kwath* and *Bharangyadi Ghanvati* both are very effective, safe and good result yielding drugs for treatment of *Vishamjwara* (Malaria) as they are – *Vatakaphashamak*, *Deepan*, *Pachan*, *Amapachan*, *Jwarangna*, *Trishnahar*,

Krimighna, *Rasayan* easily available, cheaper and with no side and adverse effect.

4. Comparative study revealed that *Bharangyadi Kwath* was much more effective than and *Bharangyadi Ghanvati*. *Bharangyadi Kwath* showed better result as compared to and *Bharangyadi Ghanvati*.

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Though this study was carried out in limited patients for a limited period, the mass study programming is needed for further huge database statistical study.

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