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Research Article

CLINICAL STUDY OF *NELAMUCHCHALA* (*GYMNOSTYCHUM FIBRIFUGUM* BENTH) IN *JWARA* W.S.R. TO *TARUNA JWARA* (ACUTE FEVER) - FOLKLORE DRUG

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ABSTRACT

The herb locally known as *Nelamuchchala* (*Gymnostachum febrifugum* Benth) belongs to Acanthaceae family, commonly available in Western Ghats of Karnataka state. It is traditionally used as a remedy in fever, cough, stomatitis, ulcers and menorrhagia. Ayurveda has many formulations for *Taruna Jwara*. But also select the single drug which is simple, easy and convenient for the patient in present study. For clinical study 40 patient were selected, fulfilling the selection criteria and were randomly divided into 2 groups A and B, irrespective of age, sex, and religion. Group A was treated by root decoction of *Nelamuchchala*, 50ml thrice a day and Group B by paracetamol tablet 500mg thrice a day for a period of 3 days followed up 7th day. Overall effect of treatment in group A shows 50% marked improvement, 40% moderate improvement and 10% mild effect. Group B shows 45% of marked improvement seen and 55% of moderate improvement in paracetomol. Results of the both the groups were shows statistically significant in temperature, head ache, body ache, irritability. But it was observed that *Nelamuchchala* decoction (*Kwata*) proved more efficient than paracetamol tablet. Both the group's results were statistically significant. The present study proves that the trail drug is effective remedy for *Taruna Jwara.*

INTRODUCTION

Folklore medicines and Ayurveda interlinked. Now day's research activities in the area of ethnomedicines have increased tremendously. The herb locally known as *Nelamuchchala* used as a remedy in fever, cough, stomatitis, and menorrhagia by local people of south canara district[1,2,3]. This drug has identified as *Gymnostychum fibrifugum* (Benth) belongs to acanthaceae family and commonly available in western Ghats of Karnataka state[4].

Fever has caused more concern to all human beings irrespective of age, sex caste, social status. *Taruna Jwara* (acute fever) is the most important diseases among the diverse ailments that are mentioned in our classics. Chakrapaani commented on *Jwarachikitsa* that *Taruna jwara* is up to 7 days[5]. In Susruta Samhita, Dalhana commented that the meaning of word *Taruna* is *Abhinava*[6]. Ayurveda too has many formulations for *Taruna jwara* (acute fever). But it is essential to carryout studies of different formulation to find out potent safer medicines.

Now a day's single drug therapy is becoming popular. Many plants are screened to understand their pharmacological action. The advantage of a single drug over a compound preparation is that it is very easy and convenient from the point of processing. Thus it is simple, easy, and convenient for the patient and the physician to fulfill purpose of treatment. Hence *Taruna jwara* (acute fever) is selected for the present study, as this has become common manifestation and a folklore practice, drug being used for the same condition. In present study an attempt has been made to establish action of trail drug *Nelamuchchala* (*Gymnostychum fibrifugum*

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*(*Benth) in *Taruna Jwara* (acute fever) and to find out a cheaper effective remedy in *Taruna Jwara* (acute fever).

MATERIAL AND METHODS

Collection of Drug

The drug for the present study were identified by Botanist and collected from the Western Ghats area of Sullia, D.K district, Karnataka according to the norms accepted in Ayurvedic texts[7]. The collected drug was washed properly and dried. Afterward made to coarse powder form and stored in clean containers.

Criteria for Selection of Patients

Patients showing the signs and symptoms of *Taruna Jwara* (acute fever) were selected from the O.P.D and I.P.D of K.V.G Ayurveda Medical College & Hospital, Sullia. A total number of 40 patients were selected. Patients of age group between 15-60 yrs are selected. Both sexes were included.

Exclusion Criteria

- Patients below the age of 15 yrs and above 60 yrs are not selected.
- Patients suffering from specific fevers or other co-existing diseases like diabetics, hypertension, tuberculosis, and leukemia are excluded.

Grouping

Total of 40 patients were admitted as in-patients for the present study. They were randomly divided into two groups. In Trial group A 20 patients were admitted as In-patients and treated with *Kwatha* (decoction) of the trial drug. Standard Group B, 20 patients were treated with a known antipyretic drug paracetamol.

Dosage: Trial drug given 50ml thrice a day for 3 days. Standard drug was 500mg thrice a day for 3 days.

Preparation of *Nelamuchchala Kwatha*

25gm of *Kwatha choorna* was boiled in 400ml water and reduced to 50ml. [8]

Group A patient was given the Kwatha for 3 days, 3 times daily in the 50ml dose along with the *Pathya Ahara* and *Vihar*. Group B Patient was advised to take the paracetamol of Dose of 500mg for 3 days. The follow up of both the groups were done after 3 days of the treatment i.e., on the 7th day. Patient is advised to take light diet.

Assessment Criteria

The effect of the treatment was assessed by clinical observation on the basis of relief on signs & symptoms of the disease in both groups [9,10].

Assessment of Overall Effect of Treatment

Marked improvement- More than 75% and up to 100% relief of the complaints

Moderate improvement- More than 50% and up to 75% relief of the complaints

Mild improvement- More than 25% and up to 50% relief of the complaints

No improvement- More than 0% and up to 25% relief of the complaints

OBSERVATION

Group A got more effect on the following symptoms like temperature, indigestion, tastelessness, headache, pain all over body, sore throat, coating of tongue, cold, cough, thirst, irritability, and constipation. Group B got more effect on the following symptoms pain all over body, absence of sweating, headache, sore throat, coating of tongue, cold, chill and constipation. Both groups got same improvement on temperature, headache, pain all over body, sore throat, coating of tongue and irritability.

RESULT

Table 1: Overall effect of Group A and Group B

Response	Group A	Percentage	Group B	percentage
Marked improvement	10	50%	9	45%
Moderate improvement	8	40%	11	55%
Mild improvement	2	10%		
No improvement	-	-	-	-

Paired t test is done for assessing symptoms in each group. Unpaired t test is done for comparing both groups.

Table 2: Result of Group A

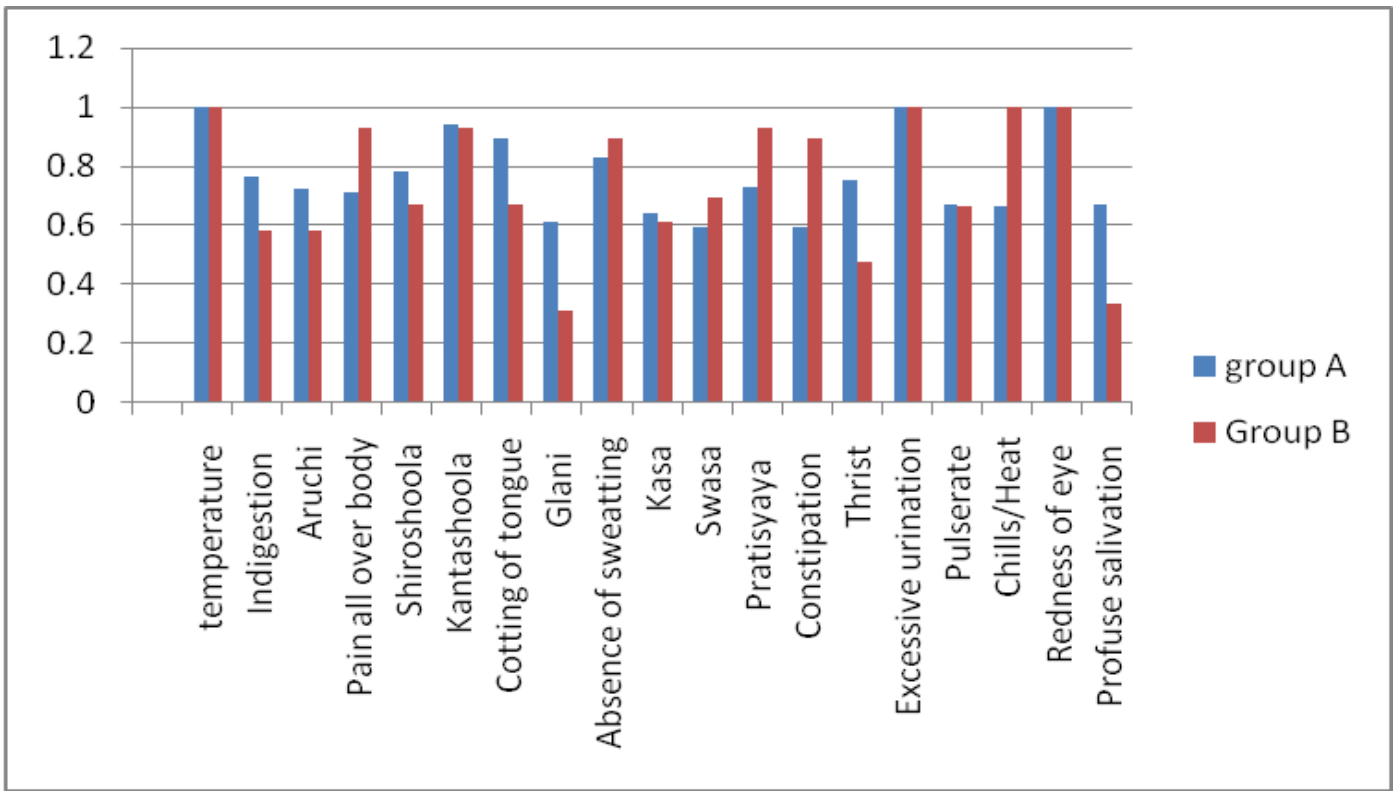
Characteristics	Group A						
Signs and Symptoms	Mean Score		% of Relief	SD (±)	SE (±)	t-value	P value
	BT	FU					
Temperature	2.09	0.00	100%	1.118	0.581	3.606	P<0.01
Indigestion	1.8	0.42	88%	0.837	0.435	3.066	P<0.01
Aruchi	1.52	0.42	67%	0.734	0.382	2.871	P<0.01
Pain all over body	1.96	0.58	71%	0.810	0.421	3.280	P<0.001
Shirobhara/Shiroveda	1.29	0.29	78%	0.702	0.365	2.740	P<0.05
Kanthashoola	0.81	0.5	94%	0.653	0.339	2.246	P<0.05
Coating of tongue	1.33	0.14	89%	0.735	0.382	3.116	P<0.05
Glani	1.71	0.67	61%	0.644	0.335	3.131	P<0.01
Absence of sweating	0.58	0.09	83%	0.495	0.257	1.852	P>0.05
Kasa	1.19	0.42	64%	0.621	0.323	2.362	P<0.05
Swasa	0.81	0.33	59%	0.527	0.274	2.260	P<0.05
Pratishaya	0.71	0.19	73%	0.418	0.21	2.409	P<0.001
Constipation	0.81	0.33	59%	0.452	0.235	2.029	P<0.05
Thirst	0.57	0.14	75%	0.388	0.202	2.25	P<0.05
Increased pulse rate	0.14	0.048	67%	0.351	0.182	1.830	P<0.05
Chill/Heat	0.14	0.048	66%	0.198	0.103	0.926	P<0.05
Redness of eye	0.1	0.0	100%	0.240	0.125	0.146	P>0.20
Profuse salivation	0.14	0.04	67%	0.198	0.103	0.926	P>0.20
Nausea	0.1	0.0	100%	0.240	0.125	1.146	P>0.20

Table 3: Results of Group B

Characteristics	Group B						
Signs and Symptoms	Mean score		% of relief	SD (±)	SE (±)	t-value	P value
	BT	FU					
Temperature	2.14	0.00	100%	1.165	0.605	3.540	P<0.001
Indigestion	1.81	0.76	76%	0.611	0.318	3.298	P>0.05
Aruchi	1.81	0.76	61%	0.577	0.300	3.494	P>0.05
Pain all over body	2.14	0.14	93%	1.131	0.588	3.402	P<0.001
Shirobhara/Shiroveda	2.0	0.67	67%	0.812	0.422	3.160	P<0.01
Kanthashoola	1.95	1.43	93%	1.170	0.608	2.976	P<0.01
Coating of tongue	1.57	0.52	67%	0.61	0.318	3.298	P<0.05
Glani	2.33	1.61	31%	0.58	0.30	2.39	P>0.05
Absence of sweating	0.85	0.09	89%	0.580	0.301	2.369	P<0.05
Kasa	1.09	0.42	61%	0.730	0.379	1.759	P>0.05
Swasa	1.66	0.52	69%	0.909	0.420	1.420	P>0.05
Pratishyaya	1.38	0.09	93%	0.908	0.472	2.725	P<0.05
constipation	1.33	0.14	89%	0.995	0.517	2.303	P<0.05
Thirst	0.81	0.42	47%	0.370	0.192	1.980	P.>0.05

Excessive urination	0.33	0.00	100%	0.418	0.217	2.409	P<0.01
Increased pulse rate	0.14	0.048	67%	0.443	0.230	2.689	P<0.01
Chill/Heat	0.1	0.0	100%	0.240	0.125	1.146	P<0.001
Redness of eye	0.14	0.0	100%	0.240	0.125	1.146	P>0.05
Profuse salivation	0.14	0.9	33%	0.247	0.128	0.372	P>0.05
Nausea	0.1	0.0	100%	0.240	0.125	1.146	P>0.05

Fig No.1 Comparison of results of Group A and Group B



Unpaired t test shows that Group A having better result than GroupB. But both groups are statistically significant.

DISCUSSION

The drug *Nelamuchchala* (*Gymnostachyum febrifugum* Benth) is only species used as an antipyretic by local people, probably because of observation of nature and clinical study of hundreds of year. The experimental study conducted on the drug *Nelamuchchala* (*Gymnostachyum febrifugum* Benth) showed marked antipyretic action in the experimental animals[11]. Based on this the study of human beings was taken paracetomol keeping the standard group.

Langhana and *Pachana* line of treatment is indicated for *Taruna jwara*[12]. Some authors opine that no medicine including *Kwatha* should be given in *Taruna jwara*. But Acharyas clearly say that the word *Kashaya rasa* in the context of contraindication of *Navajwara*.[13] and not to *Kashaya kalpana*[14]. So administration of *Tikta rasa Kwatha* in *Taruna jwara* is thus justified, taking into account of the *Jwaraghna* property. *Tikta rasa* drugs having *Amapachana* action due to its *Laghu guna*. More over *Kwatha* is preferred to other forms of *Kashaya kalpana*, because it is moderately potent and also digestible because of the *Agni samskara* done to it. In this clinical trial, *Kwatha* was selected and the *Matra* of 50ml was fixed because it was considered as *Madhyama matra*.[15]

According to observation and result provided by this clinical study of group A patients showed better improvement on *Lakshnas* like *Agnimandya, Aruchi, Shirashoola, Kanthashoola, Pratishaya, Jihwalipthata, Glani, Kasa Trishna, Lalapraseka* and increased *Nadigati* and group B showed better improvement in chill, *Angamarda, Vibandha* and *Swasa*. Group A and B show same improvement on *Santapa, Swedavarodha* and *Bahumutrata*.

The trial group has shown comparatively better percentage of improvement on 4th day which shows the potential of the trial drug. Regarding the effect on *Santapa* both the drugs are equally effective which confirms the anti-pyretic action of the drugs in

this clinical study on paracetomol with the standard drug. Probable the drug acts better on *Koshta* and *Agni* and the *Lakshanas* as which occurred to the derangement of *Agni* where as the drug paracetomol acts more on the skeletal muscles, heat regulating system and relieves the pain faster.

Probable mode of action of the drug

Taste determination of *Nelamuchchala* (*Gymnostachyum febrifugum* Benth) on 30 numbers of healthy volunteers has shown the *Tikta pradhana rasa*, *Kashaya anurasa*[16]. It leads to the inference that the drug is having *Laghu* and *Sara guna*. By observing easy elimination of stool and urine considered as, *Ushna veerya* and *Madhura vipaka*. Its marked overall effect on patients of *Jwara* that it has the *Jwaraghna* action.

Ayurveda upholds the usage of *Tiktarasa* in *Jwara*[17]. Its *Panchabhoutika* composition is *Akasha* and *Vayu*. So it will have the *Gunas* such as *Laghu*, *Ruksha, Vishada, Sukshma, Khara, Sara, Chala* etc. These are the *Viruddha gunas* to that of *Ama* and helps in *Ama paachana*. So on *Samnya vishesha siddhanta* this is the most suitable in *Sama doshavastha*. Still a drug having specific *Jwaranashaka* effect along with the *Tikta rasa* is certainly preferred in the *Jwara chikitsa* i.e., why among a lot of *Tikta rasa dravyas* some drugs are specifically mentioned in *Jwara chikitsa* by *Acharyas*. This may be called as *Dosha-vyadhi prathyanika chikitsa*. Special *Vyadhi nashakatha* of a drug may be a total of its various attributes, not just based on *Rasa* or *Guna* or *Veerya* or *Vipaka* individual[18].

Phytochemical analysis of the drug *Nelamuchchala* (*Gymnostachyum febrifugum* Benth supports the above view. The whole drug is having the flavanoids which have antioxidant and antimicrobial properties. There are the other constituents also which may be useful in other ways. Thus in *Taruna jwara* or pyrexia of unknown origin this drug not only brings down the temperature, but also can act on other associated symptom complex, which may be due to microorganisms and the resultant toxins generated in the body.

CONCLUSION

Usually the knowledge of folklore drugs is based on hundreds of years of silent clinical trials founded on observation of lower animals. Especially *Dravyas* in which the above said factors are not in correlation with each other, then the *Karma* has to be assessed by inferences drawn through analytical studies, observation on animals and based on clinical trial

The folklore drug *Nelamuchchala* (*Gymnostachyum febrifugum* Benth (*Nela muchchala* could not be correlated with any drug known in ancient literature. This plant was traditionally used for fever, infectious conditions, wounds and menorrgia. It has *Tikta pradhana rasa, Kashaya anurasa, Laghu* and *Sara guna, Ushna virya, Madhara vipaka. Trarunas jwara* (acute fever) can be correlated with pyrexia of unknown origin or acute fever according texts. Clinical trial was done on a group of 40 patients of *Tarunajwara* (acute fever). Paracetamol was taken as the standard drug for other group. Based on the result of this comparative study it may be concluded that the trail drug *Nelamuchchala* (*Gymnostachyum febrifugum* Benth) have a better action on most of the symptoms and overall effect on individual patient when compared to standard drug. This Trail drug can be used in different formulation of Fever.

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