

ROLE OF GUDUCHI KWATHA IN VATARAKTA (HYPERURICAEMIA) W.S.R. TO GOUTY ARTHRITIS

Atal Bihari Trivedi¹, Nitin Mahajan², Ritu Narang³, Nikhil Sharma^{4*}

1. Associate Professor, Dept. of Kayachikitsa, Jammu Institute of Ayurveda and Research, Jammu, India.
2. Lecturer, Dept. of Kayachikitsa, Jammu Institute of Ayurveda and Research, Jammu, India.
3. Lecturer, Dept. of Panchkarma, Jammu Institute of Ayurveda and Research, Jammu, India.
4. Lecturer, Dept. of Kaumarbhritya, Jammu Institute of Ayurveda and Research, Jammu, India.

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Abstract

Gouty Arthritis is a disorder of Purine metabolism and is an inflammatory response to the MSUM (Monosodium Urate Monohydrate) crystals formed secondary to hyperuricaemia. The purpose of the study was to explore and find out an effective, cheap, easily available and well accepted drug for this dreadful condition of the joints which was historically known as "the disease of kings" or "rich man's disease". Guduchi (*Tinospora cordifolia*) was given alone in the form of kwatha (decoction) twice daily for the period of two months. It was observed that Guduchi kwatha was found very effective in Vatarakta due to its Rasayana (anti-oxidant), vaysthapan (anti-ageing), vatahara, ushna guna (hot in potency) and steroidal properties.

Key words: Vatarakta; Guduchi; Rasayna (anti-oxidant); Purine; Anti-inflammatory; Steroid.

*Address for correspondence:

Dr. Nikhil Sharma
Lecturer, Department of Kaumarbhritya,
Jammu Institute of Ayurveda and Research,
Jammu, India – 181 123
E-mail: docnikhilsharma86@gmail.com

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INTRODUCTION

Vatarakta mostly affects the extremities like hands, foot and fingers.^[1] It has been emphasized in Ayurvedic classic Charaka Samhita that specific etiological factors leads to the morbidity of the Vata dosha and Rakta dhatu. This vitiated vata along with deranged rakta circulates very fast all over the body due to the sukshma (minuteness) and drava (liquid state) guna (characters) of vata and rakta respectively,^[2] and undergo dosha dushya sammurchana (pathogenesis) in Sandhi sthana (joints), specifically pada and angula sandhi (metatarso-phalangeal joint).^[3]

The kapha has sheeta guna (coldness) and sandhi (joints) are considered to be sthana (place) of kapha dosha.^[4] Thus, small joints not being straight promotes the accumulation of circulating vitiated vata and rakta, every time the patient indulges in teekshna-ushna-kshara aahara (spicy-fried-alkaline food).^[5] Gout is an inflammatory response to the MSUM crystals formed secondary to hyperuricaemia.^[6]

The condition is further aggravated by the factors like starvation and alcohol along with meat intake, which is a rich source of protein.^[7] All these conditions causes excessive breakdown of protein and purine in the body, which gets accumulated in the body. Deficiency of certain genetic factors like HGPRT causes either overproduction or under-excretion of these purine nucleotides.^[8]

The condition is characterized by abnormally elevated levels of uric acid in the blood, recurring attacks of joint inflammation (arthritis), and deposits of hard lumps of uric acid in and around the joints.^[9]

The study was undertaken to clinically evaluate therapeutic effects of Guduchi kwatha in the symptoms of Vatarakta (hyperuricaemia) w.s.r. to Gouty arthritis.

MATERIALS AND METHODS

Selection of Patients

30 patients diagnosed of Vatarakta of which 18 were male and 12 were female were subjected to clinical study. Patients were selected from the O.P.D., Department of Kayachikitsa, Jammu Institute of Ayurveda and Research, Jammu.

Administration of Drug

All the patients were administered 40 ml Guduchi kwatha BD after the food for 60 days. No other oral medication was advised to be taken during this period. Patients were monitored and observations were recorded before and after the drug schedule.

Method of preparation of Guduchi kwatha

After washing and drying the Guduchi kaanda (stem of *Tinospora cordifolia*) properly, which was obtained from the market, a coarse powder was made of the Guduchi kaanda.

These coarse powders were given to the patients and were told to prepare a decoction out of it in the following way. 20 grams of Guduchi was boiled on a medium fire in a 160 ml (1:8 ratio of dravya : Jala) of water and was reduced to ¼th.^[10] The decoction was used for drinking twice in a day after taking meals for 60 days.

Previous work done

Thesis work entitled Vatarakta mein Gudoochi ka Prayoga by Diwan FB on 1989 at Raipur.

Inclusion criteria

- Age in between 18 years – 70 years.
- Patients having serum uric acid concentration more than 7.0 mg/dl in males and more than 6.0 mg/dl in females.

Exclusion Criteria

- Age below 18 years and above 70 years.
- Chronic ailments like Rheumatoid arthritis, Osteo-arthritis, Diabetes, Hypo-thyroidism, Renal and liver disorders.

Study Design

It is a single blind clinical study with a pre-test and post-test design. All the patients were administered Guduchi kwath 40 ml BD for 60 days.

Laboratory Investigations

Serum uric acid level before and after the end of the treatment was investigated.

Assessment criteria

The state of the disease vatarakta is determined by adopting the standard methods of scoring for subjective, objective and special investigation criteria, before and after the administration of drug. (Table 1)

Subjective Criteria

On the basis of relief in the sign and symptoms with the help of scoring pattern, Assessment of the therapy was done.

Objective Criteria

Serum uric acid values before and after the treatment was assessed.

The statistical analysis of these values was done before the start of the treatment, and finally after the completion of the treatment.

Criteria for the total effect of the therapy

Cured – 76% to 100%
(Complete relief in subjective signs and symptoms)
Markedly improved – 51% to 75% (Relief in subjective signs and symptoms)
Improved – 26% to 50 (Relief in sign and symptoms)
Unchanged – up to 25% (Relief in some subjective sign and symptoms only)

RESULTS

The result was prepared by preparing a statistical data of objective and subjective criteria and applying t-test on the obtained values before and after the study was performed. (Table 2)

Relief in Sandhishoola was observed in 64 %, Relief in sandhi shotha was observed in 63.27 %. There was relief in 52.22 % patients in sandhi graha. There was 47.85 % relief in vaivarnata. There was 43.10 % and 25.03% relief in sparshasahatvata & serum uric acid levels respectively.

The initial score of sandhi shoola on average was 2.5 which came down to 0.9 after 60 days of treatment. The improvement on average was found to be 64 %. The improvement was found to be stastically significant with 'z' value -4.949 for 29 df. Here $p < 0.001$ which indicates that during the trial the drug is highly significant on Sandhi shoola. (Table 5)

The initial score of sandhi shotha on average was 2.26 which came down to 0.83 after 60 days of treatment. The improvement on average was found to be 63.27 %. The improvement was found to be stastically significant with 'z' value -4.939 for 29 df. Here $p < 0.001$ which indicates that during the trial the drug is highly significant on Sandhi shotha. (Table 6)

Table 1: Subjective parameters

Parameter	Finding	Scoring
1.Sandhishoola	None	0
	Mild	1
	Moderate	2
	Severe	3
2.Sandhigraha	None	0
	Mild	1
	Moderate	2
3.Sandhishotha	Severe	3
	None	0
	Mild	1
4.Vaivarnya	Moderate	2
	Severe	3
	None	0
5.Sparshasahatvata	Mild	1
	Moderate	2
	Severe	3
	None	0

The initial score of sandhi graha on average was 1.8 which came down to 0.86 after 60 days of treatment. The improvement on average was found to be 52.22 %. The improvement was found to be stastically significant with ‘z’ value -4.460 for 29 df. Here $p < 0.001$ which indicates that during the trial the drug is highly significant on Sandhi graha. (Table 7)

The initial score of Vaivarnata on average was 1.4 which came down to 0.73 after 60 days of treatment. The improvement on average was found to be 47.85%. The improvement was found to be stastically significant with ‘z’ value -4.472 for 29 df. Here $p < 0.001$ which indicates that during the trial the drug is highly significant on Vaivarnata. (Table 8)

The initial score of Sparshasahatvata on average was 1.16 which came down to 0.66 after 60 days of treatment. The improvement on average was found to be 43.10%. The improvement was found to be stastically significant with ‘z’ value -3.873 for 29 df.

Here $p < 0.001$ which indicates that during the trial the drug is highly significant on Sparshasahatvata. (Table 9)

The mean Serum Uric acid level before and after treatment on average was 7.19 and 5.39 respectively. The change on average was 25.03%. The improvement was found to be statistically significant with ‘t’ value 25.236 for 29 df. Here $p < 0.001$ which indicates that the drug has highly significant effect on Serum Uric acid levels. (Table 10)

DISCUSSION

In this present study Guduchi kwatha was used to evaluate its efficacy in vatarakta. Guduchi is mentioned as a Rasayna (anti-oxidant) in our Samhita. Guduchi as a Rasayna dravya has balya (increases strength), tridosha-shamaka, deepaniya (appetiser), shotha-hara (relieves oedma), vata-shonithara (subsides gouty arthritis) properties.^[11] It ultimately increases the functioning of immune system of the body.^[12]

Table 2: Uric acid values of 30 patients before and after the treatment along with mean, S.D, S.E.

Patients	Serum Uric Acid	
	Before Treatment	After Treatment
1	7.2	5.3
2	7.2	4.9
3.	6.2	4.5
4	6.3	4.2
5	6.7	4.8
6	7.5	5.8
7	7.2	5.5
8	6.1	4.9
9	7.3	5.1
10	7.4	5.8
11	7.8	5.9
12	7.3	5.6
13	6.4	5
14	6.7	4.9
15	7.9	6.1
16	7.2	5.5
17	7.1	5.7
18	7.7	6.1
19	7.8	5.8
20	7.6	6
21	7.5	5.8
22	7.9	6.2
23	7.4	5.8
24	7.8	5.9
25	8	6.5
26	7.2	4.8
27	7.3	4
28	6.3	4.7
29	6.5	5
30	7.3	5.8
Mean	7.193333	5.396667
S.D	1.078986	
S.E	0.346326	

Table 3: Chemical Composition of *Tinospora cordifolia*

Chemical constituent	Active principal	Part of the plant
Alkaloid	Berberine, palmatine	Stem
	Tinosporin, palmatine	Root
Glycosides	Tinocordioside, Palmatosides	Stem
Steroids	Sitosterol	
	Ecdysterone, Makisterone, Giloinsterol	

Table 4: Distribution according to the lakshana

Lakshna (Cardinal symptom)	No. of patients	Percentage
Sandhi shoola	30	100 %
Sandhi shotha	30	100 %
Sandhi graham	23	76.66 %
Vivarnata	21	70 %
Sparshasahatva	17	56.66 %

Table 5: Effect of Guduchi kwatha on sandhi shoola

Mean	d	%	+ve ranks (AT>BT)	-ve ranks (AT<BT)	Ties (AT=BT)	Z	p	df	
BT 2.5	AT 0.9	1.6	64	0	30	0	- 4.949	0.001	29

Table 6: Effect of Guduchi kwatha on Sandhi Shotha

Mean	D	%	+ve ranks (AT>BT)	-ve ranks (AT<BT)	Ties (AT=BT)	Z	P	df	
BT 2.26	AT 0.83	1.43	63.27	0	30	0	- 4.939	0.001	29

Table 7: Effect of Guduchi kwatha on Sandhi graham

Mean	D	%	+ve ranks (AT>BT)	-ve ranks (AT<BT)	Ties (AT=BT)	Z	p	df	
BT 1.8	AT 0.86	0.94	52.22	0	23	7	- 4.460	0.001	29

Table 8: Effect of Guduchi kwatha on Vaivarnata

Mean	D	%	+ve ranks (AT>BT)	-ve ranks (AT<BT)	Ties (AT=BT)	Z	p	df	
BT 1.4	AT 0.73	0.67	47.85	0	20	10	- 4.472	0.001	29

Table 9: Effect of Guduchi kwatha on Sparshasahatvata

Mean	D	%	+ve ranks (AT>BT)	-ve ranks (AT<BT)	Ties (AT=BT)	Z	p	df	
BT 1.16	AT 0.66	0.5	43.10	0	15	15	-3.873	0.001	29

Table 10: Effect of Guduchi kwatha on Serum uric acid

Mean	d	%	S.D.	S.E	t	p	Df	
BT 7.19	AT 5.39	1.8	25.03	.39	0.071	25.236	0.001	29

The Probable effect of the drug on all above symptoms could be due to the Anti inflammatory, Antioxidant, Arthritic properties of drug.^[13]

Charaka mentioned Guduchi is having vayah shapana (anti-ageing),^[14] Daha prashamana (relieves burning sensation) properties.^[15]

Vatarakta is a disease which primarily effects pada-mula sandhi (big toe),^[16] likewise Gouty arthritis too affects the small joints of our body, mostly the meta-tarsophalangeal joint.^[17] Vatarakta is caused by excessive intake of ushna-lavana aahara (hot and spicy food), mamsa (meat), dadhi (curd), sura (form of alcohol) and abhigata (injury).^[18]

Provocative factors of gouty Arthritis include diuretics, alcohol, dietary excesses, surgery, trauma, sepsis, stress, starvation and dehydration.^[19]

Sydenham's classic description lists the important clinical characteristics used to diagnose a typical attack of acute Gouty Arthritis.^[20] The attack is acute; it starts in the night; the joint and surrounding tissues are swollen, hot, red, shiny and extremely painful. There is a mild fever with chills.

Vatarakta too is characterized by daha (burning sensation), ruja (pain), shyavraktata (discoloration), shotha (swelling), stabdhata (stiffness).^[21]

Development of chronic tophaceous gout depends on uncontrolled hyperuricaemia of long duration. Patients have usually suffered from gout for atleast 10 years before tophi develop.^[22] Similarly, vatarakta if not treated in early stages may become ubhya-mishrita (chronic) and causes khanjata and panguta (deformities).^[23]

All these factors helps in establishing the fact that vatarakta can be compared with gouty Arthritis based on the Nidana (aetiology), Samprapti (pathogenesis) and lakshanas (symptoms).

CONCLUSION

On the basis of the present clinical study it can be concluded that Guduchi kwatha possesses the anti inflammatory, antioxidant, analgesic, anti-rheumatic properties and is found effective in the management of Vatarakta. It showed significant improvement in the symptoms of vatarakta but further the drug requires to be tried on a larger number of cases. The study may also be conducted with varying doses, combinations and duration of treatment.

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