

ROLE OF PUNARNAVA AMRITA GUGGULU IN THE MANAGEMENT OF VATARAKTA – A CLINICAL TRIAL

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Abstract

In the present revolutionary era the life of a person is hectic and materialistic and is quite difficult due to the various obstacles which are experienced during the routine life. The disease Vatarakta is one of them. Vatarakta is an ailment where both Vata and Rakta are responsible to lead a complex effect on the joints. Its clinical onset is from great toe which later spreads over other joints of the body. In Chakradutta, Vatavyadhi Rogaadhikaar, Chapter 23, Amrita Guggulu Dwitiya, i.e, Punarnava Amrita Guggulu is described which is taken here for the treatment of Vatarakta. This is a single blind clinical study with a pre and post-test design, wherein 30 patients of both sex, suffering from Vatarakta, in an age limit of 20 to 60 years, were selected randomly and given Punarnava amrita guggulu with an anupana of Amritaadi Kashaya 72 ml with each dose. The therapeutic effect of the treatment was assessed based on specific subjective and objective parameters. The results obtained were analyzed statistically using student paired 't' test and a significant improvement was observed in all the criteria of assessment. The use of Punarnava amrita guggulu was a perfect selection in the management of Vatarakta. It needs further study with bigger sample size in the management of Vatarakta.

Keywords: Gout; Hyperuricemia; Serum Uric Acid; Tenderness; Vatarakta.

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INTRODUCTION

Vata is the main dosha governing the body movements and is considered as the most significant among Tridoshas because of its control over other two doshas and six distinguishing features like spreading, quick action, vigor, capability to vitiate other doshas, autonomy, and the power to create the maximum number of diseases.^[1] Meanwhile, it is also assumed that the life of living beings absolutely depends on Rakta.^[2] Vatarakta is an illness where both vata and rakta are afflicted by distinct etiological factors.^[3]

Due to similarity in etiological factors, signs and symptoms, line of treatment and complications, Vatarakta may be compared with Gout in the allied sciences. Gout is a clinical syndrome and is a group of metabolic diseases in which clinical manifestations are associated with tissue deposition of crystals of monosodium urate monohydrate from hyperuricemic body fluids.^[4] Acute Gout affects mainly synovial joints, cartilages, tendon sheaths and bursae but the local aggregation of monosodium urate monohydrate crystals also occur in non-articular cartilage.^[5] Over the span of years, the progressive accumulation of urates and recurrent attack of inflammation leads to chronic destructive arthritis.^[6]

Previous works done

Approximately 37 studies have been conducted all over India on Vatarakta.^{[7][8][9][10]} On analysis it is revealed that most of the studies were carried out by considering Vatarakta as gouty arthritis or rheumatoid arthritis. A few studies have also been performed considering Vatarakta as an ischemic limb disease. Even after the towering prevalence of the disease in the present population, very few research studies have been conducted in this regard, which mainly deal with the outcome of the Purification (Shodhana) therapies. However, the results of

these small numbers of studies are extremely promising.

As it is a disease involving Avarana, different preparations with drugs having Srotho sudhikaraka (drugs which cleanses the channels) and disease eliminating (vyadhi hara rasayana) properties like Guggulu are exclusively indicated in the management of Vatarakta. The herbal preparation like Punarnava amrita guggulu, consisting mainly of ingredients like Guggulu (*Commiphora mukul*), Triphala (*Terminalia chebula* Retz., *Terminalia bellerica*, *Emblica officinalis*), Guduchi (*Tinospora cordifolia*),^[11] are said to be useful in curing the illness.^[12]

Thus, keeping the above-mentioned data in mind, the present study was carried out in search of a better drug for the management of Vatarakta.

AIMS AND OBJECTIVES

The main aims and objectives of the study are to study the efficacy of Punarnava amrita guggulu in the management of Vatarakta.

MATERIALS AND METHODS

Selection of the Patients

Patients were selected from OPD and IPD of Kripayanam Research and Therapy Centre, Gandhi Road Kankhal Haridwar and Rishikul State Ayurvedic College and Hospital Hardwar, Uttarakhand with signs and symptoms of Vatarakta. Total 30 patients were registered for trial irrespective of sex, caste, religion etc.

Inclusion criteria

1. Age group between 20-60 years.
2. Patients having classical symptoms of Vatarakta.

3. Patients having elevated serum Uric acid level more than 8mg/dl.^[13]

Exclusion criteria

1. Patients with age of less than 20 and more than 60 years.
2. Patients having complications of any other systemic diseases like nephropathies, cardiomyopathies, etc.
3. Patient having any other systemic illness like Diabetes mellitus (DM), Hypothyroidism, Rheumatoid Arthritis (RA).

Investigations

The investigations Hb%, TLC, DLC, ESR, Serum uric acid level, RA Factor carried out on all 30 patients for the conduction of this study:

Study Design

The study was a single blind, clinical study with a pre and post-test design.

Posology

In trial a group of thirty patients was given oral administration of Tab. Punarnava amrita guggulu (prepared by the author) in a dose of 500 mg thrice a day with the anupana of Amritadi kashaya 72 ml.^[14]

Method of Preparation of the drug

For the preparation of Punarnava amrita guggulu I, Triphala [Amalaki (*Emblica officinalis* Gaertn.; Euphorbiaceae), Vibhitaki (*Terminalia Bellerica*; Combretaceae), Haritaki (*Terminalia chebula* Retz.; Combretaceae)], Amrita [*Tinospora cordifolia* (Willd.) Miers ex. Hook. F.&Thoms]; Menispermaceae) and Punarnava (*Boerhavia diffusa*; Nyctaginaceae) are crushed to coarse powders manually. They are dipped overnight into water that is taken in the amount 8 times

the amount of the coarse powder. In the morning, this water is boiled until 1/4th of the total amount of water is left. The liquid which we are left with is the decoction. In this decoction of Triphala, Amrita and Punarnava, purified Guggulu gum is added and this mixture is heated slowly so that we get syrup like liquid of hard consistency. Guggulu, Amrita, Punarnava and Triphala are added in a ratio of 1:2:2:3 in this preparation. Now, fine powders of herbs (number 2 to 12 mentioned in Table 1) are added and this mixture is pounded (stricken again and again) in a mortar and pestle. Processing this mixture for some hours decreases the particle size and increases the bioavailability of the mixture. Thereafter, tablets are made from this gum like mixture by hand. The average size varies between 450-500 mg per tablet.

Assessment criteria

- Complete Remission: 100% Relief
- Markedly Improved: 76-99% Relief
- Moderately Improved: 51-75% Relief
- Improved: 26-50% Relief
- Unchanged: 0-25% Relief

Statistical Analysis

The data gathered on the basis of above observation was subjected to statistical analysis in terms of Mean (X), Standard Deviation (S.D.) and Standard Error (S.E.) and Paired 't' test was carried out at P >0.05, P<0.05, P<0.01 and P<0.001 levels. The results obtained were interpreted as

| | | |
|-------------------------|---|---------|
| Insignificant | - | P>0.05 |
| Low or Mild Significant | - | P>0.05 |
| Significant | - | P<0.01 |
| Highly Significant | - | P<0.001 |

RESULTS AND DISCUSSION

Vatarakta holds a significant place in literatures due to its high prevalence and severity. Samhita period also describes the disease Vatarakta in detail in the Ayurvedic classical texts like Charaka Samhita, Sushruta Samhita, Ashatanga Hridaya and Madhava Nidana. The incidence of Vatarakta increased in last few decades due to various factors like increasing industrialization, urbanization, environmental pollution & faulty dietary habits. Sedentary lifestyle is responsible directly or indirectly for the onset.^[15] Hence, the sample indicates the prevalence of the illness in middle and higher class people due to all the above factors.

Patients showed marked remission of the symptom of pain after intervention. The results are shown in Table 2. The initial mean score for joint pain (Sandhi Shool) was 2.866, which came down to 1 after treatment, exhibiting a statistically, highly significant improvement, with $P < 0.001$ and about 65.11% relief. Burning sensation (Vidaha) was one of the cardinal symptoms of Vatarakta, which was relieved by 87.5% in patients. 87.5% percent improvement was observed in the symptom of edema with pain (Saruk Shotha). This improvement after the treatment was found to be highly significant ($P < 0.001$) as per the paired “t” test. It showed that Punarnava amrita guggulu was helpful in managing the symptoms of Vatarakta.

Discoloration of skin (Twak vaivarnyata) is another symptom of Vatarakta. The initial mean score of the patients for discoloration of skin was 1.533, which was reduced to 0.866 after the treatment. The initial mean score of the patients for tenderness (Sparsha asahishnuta) was 3.133, which was reduced to 2.867. The improvement was 91.48%. This improvement was significant with $P < 0.001$. In case of the symptom of edema with pain (Saruk shotha), the change that occurred with the treatment was greater than what could be

expected by chance; there was a statistically significant change ($P < 0.010$), as assessed by the paired “t” test. 94.28% percent improvement was observed in the score of itching (Kandu); the initial mean score was recorded 2.333 in the 30 patients of Vatarakta. This was brought down to 0.1333 after the administration of Punarnava amrita guggulu. This improvement after the treatment was found to be highly significant ($P < 0.001$) as per the paired “t” test. The mean initial score of Serum Uric Acid was 8.84 before the treatment. This initial mean score came down to 5 after the treatment. The improvement to the tune of 43.43% was significant ($P < 0.001$), as revealed by the paired “t” test. The overall assessment revealed the efficacy of Punarnava Amrita Guggulu in managing the illness.

Ayurvedic mode of action of Punarnava amrita guggulu on Vatarakta

Various Ayurvedic therapeutics of the ingredients used in the preparation of Punarnava amrita guggulu are discussed here to correlate the broad therapeutics of Punarnava amrita guggulu. The drug Bibhitaki, Danti and Trivritta shows Pitta Kapha hara properties while Vidanga, Twaka and Shunthi are Vata kapha hara. Haritaki, Pippali, Maricha, Amrita & Amalaki all are Tridosha nashaka. Also Pitta Saraka properties of Amrita and Trivritta help to reduce Pitta and associated symptoms which can help in reducing inflammatory aspect of the disease. Most of these drugs show a characteristic of Ushna veerya (hot potency) with Laghu (easily digestible), ruksha (dry) and Tikshna guna (qualities), which helps in easy assimilation of drug in body whereas Shunthi and Guduchi are Guru (hard to digest) and Snigdha (oily) which further helps in Vatahara action of the drugs. The Vipaka (post digestive effect) characteristic of Haritaki, Bibhitaki, Amalaki, Amrita, Shunthi and Pippali are Madhura (sweet) which have Vata pitta shamaka (pacifying) properties. (Table 3)

Table 1: Ingredients of Amrita guggulu

| S.No. | Ingredient Name | Scientific Name (Family) | Parts Used | Ratio |
|-------|-----------------|---|---------------------------|--|
| 1. | Guggulu | <i>Commiphora wightii</i> , Hook. (Burseraceae) | Oleo-gum resin from stems | 48 parts |
| 2. | Haritaki | <i>Terminalia chebula</i> Retz. (Combretaceae) | Fruits | 96 parts as main ingredient and 1 part as the prakshepa dravya |
| 3. | Vibhitaki | <i>Terminalia Bellerica</i> (Combretaceae) | Fruits | 96 parts as main ingredient and 1 part as the prakshepa dravya |
| 4. | Amalaki | <i>Emblica officinalis</i> Gaertn. (Euphorbiaceae) | Fruits | 96 parts as main ingredient and 1 part as the prakshepa dravya |
| 5. | Amrita | <i>Tinospora cordifolia</i> [(Willd.) Miers ex Hook.F. &Thoms] (Menispermaceae) | Stem | 192 parts as main ingredient and 3 parts as the prakshepa dravya |
| 6. | Shunthi | <i>Zingiber officinale</i> (Rosc.) (Zingiberaceae) | Rhizome | 1 part |
| 7. | Pippali | <i>Piper longum</i> Linn. (Piperaceae) | Fruits, Root and Stem | 1 part |
| 8. | Vidang | <i>Embelia ribes</i> Burm. (Myrsinaceae) | Fruits | 3 parts |
| 9. | Trivritt | <i>Operculina turpethum</i> L. (Convulvulaceae) | Root | 1.5 part |
| 10. | Danti | <i>Baliospermum Montanum</i> (Willd.) Muell-arg (Euphorbiaceae) | Leaves, Root and Stem | 3 parts |
| 11. | Twak | <i>Cinnamomum zeylanicum</i> (Lauraceae) | Bark, oil and leaves | 3 parts |
| 12. | Chitraka | <i>Plumbago zeylanica</i> (Plumbaginaceae) | Root and Bark | 3 parts |
| 13. | Punarnava | <i>Boerhavia diffusa</i> (Nyctaginaceae) | Root, all parts | 96 parts |

Table 2: Effect of therapy on subjective and objective parameters in patients of Vata-rakta

| S.No. | Sign & Symptoms | Mean Score | | D± | Per. of relief | SD± | S.E. | 't' value | P value |
|-------|---|----------------|-----------------|--------|----------------|--------|--------|-----------|---------|
| | | No. of Pt (BT) | No. of Pt. (AT) | | | | | | |
| 1. | Sandhi-Shool (joint pain) | 2.866 | 1 | 1.866 | 65.11 | 0.7432 | 0.191 | 9.727 | <0.001 |
| 2. | Saruk-Shoth (edema with pain) | 2.666 | 0.333 | 2.333 | 87.5 | 0.488 | 0.126 | 18.52 | <0.001 |
| 3. | Raga (redness) | 1.8 | 0.8 | 1 | 55.55 | 0.7559 | 0.195 | 5.123 | <0.001 |
| 4. | Kandu(itching) | 2.333 | 0.1333 | 2.22 | 94.28 | 1.2649 | 0.326 | 6.736 | <0.001 |
| 5. | Vidaha (burning) | 2.133 | 0.2666 | 1.8666 | 87.5 | 0.6399 | 0.165 | 11.29 | <0.001 |
| 6. | Tvaka-Vaivarnyata (discoloration of skin) | 1.533 | 0.8666 | .666 | 43.47 | 0.8165 | 0.210 | 3.162 | <0.01 |
| 7. | Sparsha-Asahishnuta (Tenderness) | 3.133 | 0.2667 | 2.8667 | 91.48 | 0.915 | 0.236 | 12.12 | <0.001 |
| 8. | Serum Uric Acid | 8.84 | 5 | 3.84 | 43.43 | 1.0702 | 0.2763 | 13.896 | <0.001 |
| 9. | Hb% | 8.7 | 12.533 | -3.833 | 44.06 | 0.7237 | 0.1869 | 20.51 | <0.001 |
| 10. | ESR | 36.667 | 23.667 | 13 | 35.45 | 4.9281 | 1.2724 | 10.217 | <0.001 |

Table 3: Showing Pharmacological Properties of the contents of Punarnava Amrita Guggulu

| Name | Latin name | Rasa | Guna | Veerya | Vipaka | Prabhava | Doshaghata |
|-----------|------------------------------|-----------------------------|---|--------------------|--------|---------------------------------|-------------------|
| Amrita | <i>Tinospora cordifolia</i> | Madhur Tikta; Kashaya | Guru; Snigdha | Ushna | Madhur | Rasayana | Tridosh |
| Guggulu | <i>Commiphora wightii</i> | Katu; Tikta | Teekshna; Sugandhi; Sara; Sukshma | Ushna | Katu | Vedana sthapana, Rasayana | Vata-Kapha |
| Haritaki | <i>Terminalia chebula</i> | Panch Rasa | Laghu; Ruksha | Ushna | Madhur | Rasayana | Vata anulomana |
| Amalaki | <i>Emblica officinalis</i> | Panch Rasa | Guru; Ruksha; Sheet | Sheet | Madhur | Rasayana | Tridosha |
| Bibhitaki | <i>Terminalia bellerica</i> | Kashaya | Laghu; Ruksha | Ushna | Madhur | Chhedana | Tridosha |
| Danti | <i>Baliospermum montanum</i> | Katu | Guru; Tikshna | Ushna | Katu | Tikshana- rechana | Kapha-Vata |
| Shunthi | <i>Zingiber officinale</i> | Katu | Laghu; Snigdha | Ushna | Madhur | Deepana, Triptighana | Vata-Kapha |
| Pippali | <i>Piper longum</i> | Katu | Laghu; Snigdha; Tikshna | Anushnaa sheeta | Madhur | Deepana | Kapha-Vata |
| Vidanga | <i>Embelia ribes</i> | Katu Kashaya | Laghu; Ruksha Tikshna | Ushna | Katu | Krimighana | Vata-Kapha |
| Twaka | <i>Cinnamomum zeylanicum</i> | Katu, Tikta, Madhur | Laghu; RukshaTikshna | Ushna | Katu | Chhedana | Kapha |
| Chitraka | <i>Plumbago zeylanica</i> | Katu | Laghu; Ruksha; Tikshna | Ushna | Katu | Deepana- Pachana | Kapha |
| Trivritta | <i>Operculina turpethum</i> | Katu, Tikta | Laghu; RukshaTikshna | Ushna | Katu | Sukh-Virechaka | Vata-Kapha |

Out of 12 ingredients, 10 show the property of Vatarakta Shamaka which finds a solid base for treatment of Vatarakta (Gout) with raised uric acid.

Overall, the aforesaid Ayurvedic therapeutics conclude that the preparation of Punarnava amrita guggulu with twelve ingredients are enriched for the properties that certainly prove better in Vatarakta as well as in other Vata diseases.

Pharmaco-dynamic aspect of Punarnava amrita guggulu in modern parlance

The management of hyperuricemia goes through two ways:

1. Management of Symptoms

2. Breaking down the Pathology, this comprises of two set of medications:

- I. Inhibition of Xanthine Oxidase. Xanthine Oxidase inhibitors decrease the production of Uric Acid by interfering with Xanthine Oxidase enzyme.^[16]
- II. Excretion of Uric acid through Uricosurics.^[17] Uricosurics increase the excretion of uric Acid by reducing its re-absorption once the kidneys have filtered it out of the blood.

The effect of trial drug Punarnava amrita guggulu is due to anti-inflammatory^{[18][19]} activity of Amrita which reduces the inflammation and gives symptomatic relief as well as its uricosuric action which

excretes excess amounts of Uric Acid from the body.^[20] Amrita also works on the other associated symptoms of the disease like fever^[21] and stone forming tendencies.^[22]

Another important content of Punarnava amrita guggulu is Guggulu which possesses the properties of anti-inflammatory,^{[23][24]} antioxidant,^{[25][26]} Uricosuric,^[27] anti-rheumatoidal that helps in breaking the patho-physiology of Gout.^[28]

Triphala works as a Xanthine Oxidase inhibitor^[29] like Allopurinol which suppresses the production of Uric Acid. Its content Haritaki has antioxidant^{[30][31]} and adaptogenic^[32] properties which help in the recovery and healing of deformed tissue. Bibhitaki, another content of Triphala has nephro-protective^[33] function which retards the Urolithiasis and dissolves already formed stones in kidney while Amalaki has anti-inflammatory, analgesic, antipyretic^[34] and antioxidant^[35] properties which help reducing the local and systemic inflammatory effects of Gout.

Vidanga with its antioxidant^[36] property brings out the regenerative changes in the deformed joints due to hyperuricemia induced Gout.

Trivritta and Danti possess anti-inflammatory and immunomodulatory^[37] properties respectively which help in alleviating the symptoms of the disease and combating the hyper-immune responses. Also, Danti possesses antioxidant^[38] property which helps in the rejuvenation of the joint along with breaking the pathology of the disease.

Punarnava has Anti-inflammatory^[39] action and thus suppresses the symptoms of Gout. It also has Diuretic^[40] effect thus decreasing the amount of Uric Acid in blood.

Chitraka has anti-inflammatory^{[41][42]} properties thus, helps in subsiding the inflammatory effects of the disease.

In this way, Punarnava amrita guggulu has all the aspects of Pharmaco-therapeutic effect required for the management of Hyperuricemia induced Gout like Anti-inflammatory, Anti-oxidant, Immuno-modulator, Xanthine Oxidase Inhibitor, Uricosuric and Diuretic effects. Punarnava Amrita Guggulu as a compound formulation contains the drugs which have multi directional effect on the management of Gout. Hence, it has shown highly significant results in the management of the disease. As per the properties of drugs, it also has preventive effect in Gout.

CONCLUSION

The study shows that as described in ancient Ayurveda literature Vatarakta is a disease which is characterised by pain, burning, swelling, and itching at particular site of the joints especially in meta-tarso-phalangeal joint which is also described in case of Gout by contemporary literature. Vatarakta is purely Shakha gata disease which is caused by vitiation of Vata with disordered property of Rakta hence it is called Vata and Rakta vikara. Punarnava amrita guggulu has significant effect on the symptoms of Vatarakta as described in our texts and this study has proved the same. Punarnava amrita guggulu is also very significant effect on the level of serum uric acid, which is a prominent marker of diagnosis and prognosis of Vata-rakta with special reference to disease Gout.

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