International Journal of Pharmacy and Pharmaceutical Science
www.pharmacyjournal.org
Online ISSN: 2664-7230, Print ISSN: 2664-7222
Received: 30-08-2021, Accepted: 15-09-2021, Published: 01-10-2021
Volume 3, Issue 2, 2021, Page No. 16-20

Role of *Trivritadi Kwath* in *Vatarakta* (Gout)

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DOI: https://doi.org/10.33545/26647222.2021.v3.i2a.21

Abstract
Objective: Modern era is an era of sedentary life style. Due to this altered life style and food habits, human beings are becoming more vulnerable to many disorders. The disease which is caused due to the vitiation of *Rakta* initiated by the morbid *Vata* is called *Vatarakta*. The status of *Vatarakta* is often compared with Gout in the allied sciences. This study mainly aims to evaluate the efficacy of *Trivritadi Kwath* (TK) in the management of *Vatarakta* (Gout) and to provide a reliable, cost effective *Ayurvedic* treatment for Gout.
Materials and Methods: The study was conducted over 34 patients of *Vatarakta* (Gout) for a period of 45 days with follow up of 15 days and were selected from the O.P.D. of *Kayachikitsa* department of Rishikul Campus, Uttarakhand Ayurved University, Haridwar on the basis of inclusion and exclusion criteria by applying appropriate statistical test. Patients was assessed on the basis of subjective and objective parameters, before and after trial.
Result: The effect of trial was assessed on the basis of percentage relief on subjective and objective parameters. Maximum improvement was found in *Shotha* (Swelling) i.e. 89.66%, Overall response was complete relief in 17.65% of patients, marked improvement in 11.76% of patients, moderate improvement in 23.52% of patients, mild improvement in 47.06% of patients in Gout.
Conclusion: It is concluded that *Trivritadi Kwath* (TK) is effective in managing the patients of Gout by checking its pathogenesis because of *Agnideepan* (increase digestive fire), *Shothahar* (Anti-inflammatory), *Vatapitta Shamak*, *Mutral* (diuretic) properties.

Keywords: *Vatarakta*, gout, *Trivitadi Kwath*

Introduction
Vata (air) is the main *Dosha* (humor)controlling the movement of body and is considered to the most important between the *Tridoshas* (three functional humors) due to its control over other two *Doshas* and six characteristic features like proliferation power, rapid action, vigor, capability to vitiate other *Doshas*, autonomy, and the power to cause a greater number of diseases [1]. *Vata* gets aggravated due to either *Avarana* (obstruction) or *Dhatukshaya*. *Vatarakta* is one of the unique disorders among the *Vatavyadhi* which is the result of obstruction of morbid *Vata Dosha* by vitiated *Rakta* (blood) *Dhatu*. Meanwhile, it is believed that the life of living beings completely depends on blood. *Vatarakta* is an illness where both *Vata* (air) and *Rakta* (blood) are afflicted by different etiological factors [2].
Gouty Arthritis is a Purine metabolism disorder with an inflammatory response to the MSUM (Monosodium Urate Monohydrate) crystals that formed secondary to hyperuricaemia. The prevalence of gout is <1% to 6.8% and an incidence of 0.58-2.89 per 1000 person- years. With increasing the age, prevalence of Gout is more in men than in women. Gout is rare in children and pre-menopausal females in India as in premenopausal women, estrogen hormone helps in urate clearance [3].
Drugs in modern medicine are effective in relieving symptoms and pain but are associated with side effect that is why long-term use is cautionary and the treatment are too costly. The drug *Trivritadi kwath* seem to be cost effective and safe as compared to allopathic medicines. Hence the drug taken for this present study is *Trivritadi kwath* an herbal preparation as per classical *Ayurvedic* texts. *Trivritadi kwath* is a classical *Yoga* (formulation) which is described in *Bhavprakash* in *Vatarakta Chikitsa*.
This formulation possesses anti-inflammatory, anti-arthritic, analgesic, and immune modulator properties which can help the patient to subside the symptoms of gout or *Vatarakta* as well as has the ability of lowering serum uric acid. This study aims the evaluation of the efficacy of *Trivritadi Kwath* in the management of *Vatarakta* and to provide a reliable, cost effective *Ayurvedic* treatment for *Vatarakta*.

Materials and Methods
Source of Data
36 Patients with classical features of *Vatarakta* attending the O.P.D. of *Kayachikitsa, Acharya Pandit Mukindilal Dwivedi Ayurvedic Chikitsalaya*, Rishikul Campus, UAU Haridwar were selected randomly for this clinical study. The study was conducted on the basis of inclusion and exclusion criteria depending on classical features, serum uric acid, detailed clinical history, physical examination and other necessary and desired investigations.

Reason of dropout
Total 36 patients of *Vatarakta* were participated in this research study. Out of which 34 patients had completed the trial for the

period of 45 days and 2 patient's dropout the trial in between, due to unknown cause.

Type of study: It is a single arm open trial clinical study.

Duration of treatment: 45 days

Method of treatment: Among the wide range of *Ayurvedic* preparations for *Vatarakta*, *Trivritadi kwath* was selected for evaluation in the present study in the form of *Kwath***.** This medicine was taken 40ml twice a day orally. The constituents of *Trivritadi kwath* are *Trivirt, Vidarikand* and *Gokshura.*

Assessment: was done at the interval of 7 days

Follow up: The follow up of the patients were done 15 days after completion of the trial.

Inclusion Criteria: Patient whose age was between 30-60yrs, having the symptoms of *Vatarakta* and willing to participate in the trial and with informed consent was taken.

Exclusion Criteria: Patients with age of <30 years and >60 years**,** known case of Septic arthritis, osteoarthritis, rheumatoid arthritis, Severe systemic multi organ failure, with secondary hyperuricemia (i.e., patient on ATT, chemotherapy)**,** uncontrolled diabetes, renal impairment and autoimmune disease (i.e., patient of RA, psoriasis) were excluded.

Criteria for withdrawal: Personal matters**,** inter-current illness**,** aggravation of complaints**,** any other difficulties**,** leave against medical advice

Investigation

For ruling out the other pathological conditions in all the patients, the investigations i.e., Hb%**,** T.L.C**,** D.L.C**,** E.S.R**,** B. Sugar (fasting and PP)**,** LFT (SGOT, SGPT)**,** B. Urea**,** S. Uric acid**,** S. Creatinine**,** Urine analysis- routine & microscopic were done before and after completion of treatment.

Assessment Criteria

The assessment was done on the subjective and objective parameters, and scoring was done before and after the treatment. The result assessed and compared before and after treatment, statistical analysis and percentage of relief was used to find out the efficacy of drug.

In Subjective parameters, the assessment of the drug trial is done on the basis of improvement in the sign & symptoms described in the *Samhitas* before, during and at the end of trial. Subjective criteria are *Kandu* (Itching), *Daah* (burning), *Ruja* (pain), *Toda* (tenderness), *Shotha* (swelling), *Stabdhta* (Stiffness), *Twak vaivarnaya* (skin discolouration).

Table 1: Following scoring pattern were adopted for assessment of the effects of treatment:

Parameters		Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
Kandu (Itching)		No itching	Mild itching	Moderate itching	Severe itching	-
Daah (burning)		No burning sensation	Mild burning sensation	Moderate burning sensation	Severe burning sensation having no relation with food	-
Ruja (pain)	Intensity of pain	No pain	Mild pain	Moderate bearable pain	Severe pain with H/O occasional use of NSAIDs	-
	Frequency of pain	No pain reported	Pain occurs 1 to 4 times per month	Pain occurs more than 2 times per week	Pain occurs daily	-
	Duration of pain	No pain	Pain lasts for more than 1 to 3 hours throughout the day	Pain lasts for more than 3 hrs but gets relieved for sometimes throughout the day	Continuous pain throughout the day	-
Toda (tenderness)		No pain on palpation	Mild pain on palpation	Moderate pain on palpation	Patient do not allow to palpate	-
Shotha (swelling)		No swelling	Joint swelling which may not be apparent on casual inspection, but recognizable by experienced examiner	Joint swelling obvious even on casual observation	Markedly abnormal swelling	Joint swelling to a maximally abnormal degree
Stabdhta (Stiffness)		No stiffness	Morning stiffness	Stiffness with off and on through the day	Persistent stiffness of mild/moderate degree	Persistent stiffness of severe degree
Twak Vaivarnya (skin discolouration)		Normal colour skin	Red	Brownish red	Reddish black	-

In Objective parameters, the objective assessment was done on the basis of changes in relevant laboratory parameters DLC, ESR and serum uric acid before and at the end of the trial. Objective criteria are Serum Uric acid, ESR, DLC.

Assessment Criteria: for the assessment of changes in the clinical features of *Vatarakta* before and after treatment. The result thus obtained from individual patient was categorised according to the following grades:

No improvement –< 25% improvement
Mild improvement – >25% to <50% improvement
Moderate improvement – >50% to 75% improvement
Marked improvement – >75% improvement
Complete improvement – 100% improvement (cured)

All information on various parameters was gathered and statistical study was carried out in terms of median (X), standard deviation (S.D), standard error (S.E). Wilcoxon's signed rank test

was applied within group for subjective parameters. For objective criteria before and after treatment Paired-t-test was applied to the statistical data for evaluating the effect of therapy and finally result was incorporated in terms of probability (p) as: P>0.05 - Not significant; P<0.01 and <0.05 – Significant; P<0.001 - Highly significant

Observations and Results

Total 36 patients of *Vatarakta* were selected according to inclusion and diagnostic criteria for this research study. Out of which 34 patients had completed the trial for the period of 45 days and 2 patients left the trial in between. The whole data is divided into two sections as demographic data and clinical data.

Table 2: Demographic and Clinical distribution of patients

S. No.	Features	No. of Patients	Percentage (%)
A.	Demographic profile		
1.	Age (30-40 yrs)	20	55.5%
2.	Sex (Male)	20	55.5%
3.	Religion (Hindu)	32	88.8%
4.	Socio-economic (Middle)	21	58.3%
5.	Marital (Married)	29	80.5%
6.	Education (Graduate)	11	30.5%
7.	Occupation (housewife)	13	36.1%
8.	Area (Urban)	26	72.2%
9.	Appetite (Less)	24	66.6%
10.	Dietary habits (Vegetarian)	20	55.5%
11.	Bowel Habits (Regular)	23	63.8%
B.	Clinical profile		
1.	Serum Uric acid (Elevated)	29	80.5%
2.	ESR (Elevated)	33	91.6%
3.	DLC Changes (Absent)	29	80.5%

Table 3: Distribution of signs and symptoms of 36 patients of *Vatarakta*

Symptoms	No. of Patients	Percentage (%)
Kandu (Itching)	5	13.8 %
Daah (Burning)	7	19.4 %
Ruja (Pain)	36	100 %
Toda (Tenderness)	32	88.8 %
Shotha (Swelling)	30	83.3 %
Stabdhta (Stiffness)	34	94.4 %
Twak Vaivarnya (Discolouration of skin)	9	25 %

Clinical Results

Table 4: Assessment of result of *Trivritadi Kwath* in Subjective parameters of *Vatarakta*

Parameters	Mean		SD		% Effect	Wilcoxon W	P-Value	Result
	BT	AT	BT	AT				
Kandu (Itching)	0.21	0.18	0.54	0.24	14.29	-1.000[a]	>0.05	NS
Daah (Burning)	0.32	0.09	0.77	0.00	72.73	-2.060[a]	<0.05	Sig
Intensity of pain	2.56	0.74	0.50	0.57	71.26	-5.202[a]	<0.05	Sig
Frequency of pain	2.97	2.12	0.17	1.32	28.71	-3.866[a]	>0.05	NS
Duration of pain	3.00	1.71	0.00	1.36	43.14	-3.831[a]	<0.05	Sig
Toda (Tenderness)	1.50	0.44	0.75	0.33	70.59	-4.406[a]	<0.05	Sig
Shotha (Swelling)	1.71	0.18	0.76	0.46	89.66	-5.013[a]	<0.001	HS
Stabdhta (Stiffness)	1.53	0.47	0.71	0.29	69.23	-4.780[a]	<0.05	Sig
Twak Vaivarnaya (Discolouration)	0.35	0.12	0.73	0.00	66.67	-2.060[a]	<0.05	Sig

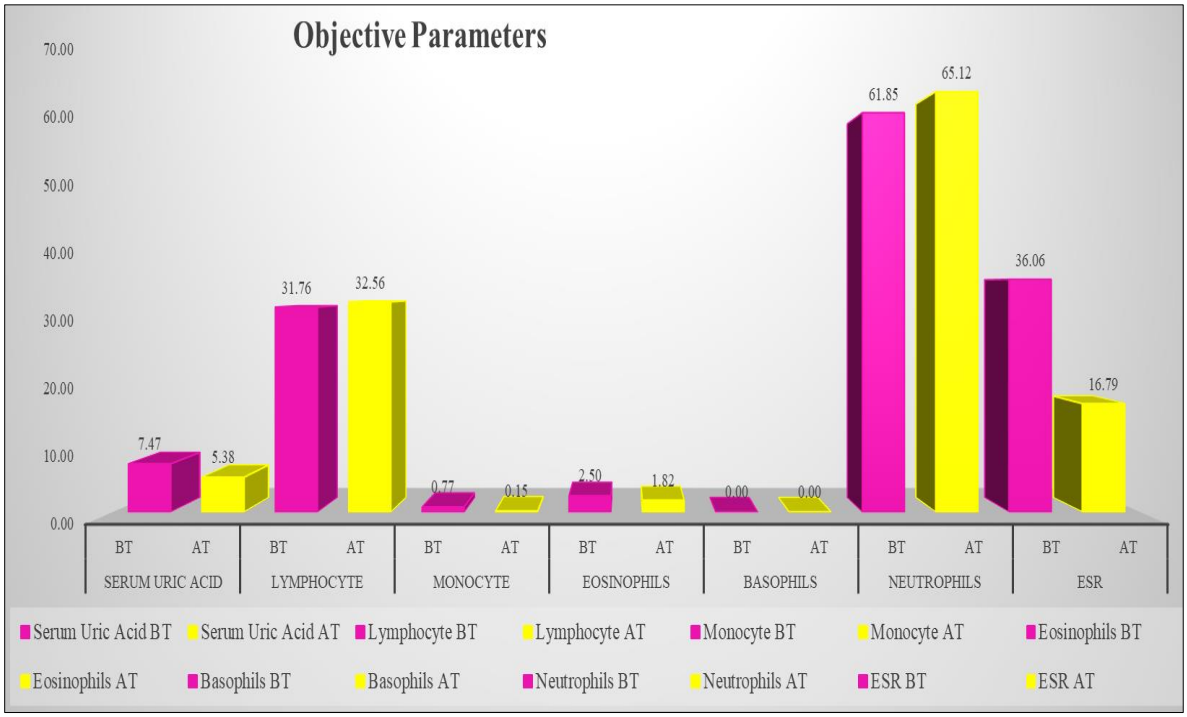

Fig 1: Assessment of result of *Trivritadi Kwath* in Objective parameters of *Vatarakta*

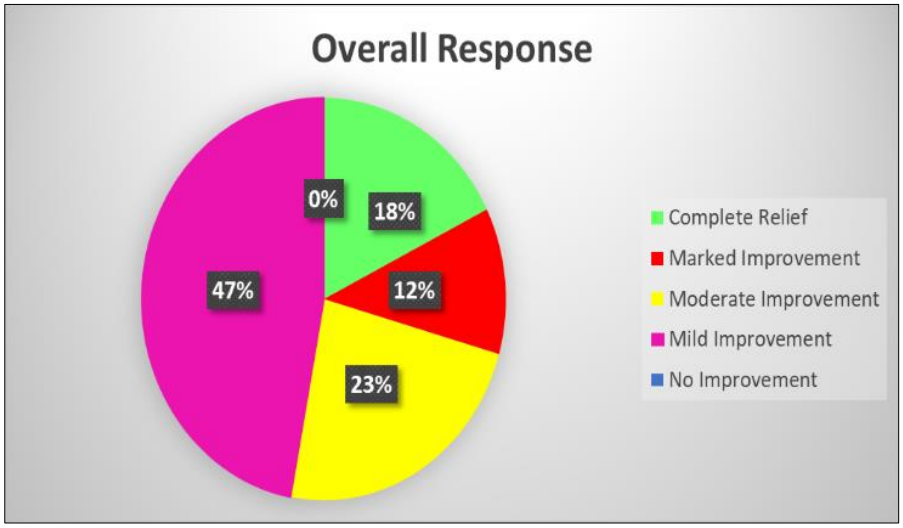

Fig 2: Estimation of overall response in 36 patients of *Vatarakta*

Discussion

Discussion on demographic profile

Maximum patients belonged to age group of 30-40 years (55.5%) due to fast food and busy life schedule with stress. Males (55.5%) because gout is more prevalent in men than in women with increasing age. Hindu (88.8%) due to geographical predominance of Hindu on Haridwar districts. Middle class (58.3%) due to predominance of middle class people in the government hospital. Married (80.5%), usually majority of the people are married at this age. Graduate (30.5%) due to lack of job opportunities as well as low salary scale which results lot of stress. Housewife (36.1%) due to the less physical activity or habit of day sleep. Urban area (72.2%). Due to the location of Hospital in Urban area of Haridwar or faulty dietary habits and lifestyle of people residing in urban areas. Decreased appetite (66.6%) because of *Mandagni* (low digestive fire). Vegetarian (55.5%) due to population characteristic of Haridwar. Regular bowel habits (63.8%) due to aggravated *Pitta Dosha*.

Discussion on clinical profile

Maximum (80.5%) of the patients were elevated Serum Uric acid. As the risk of gout is associated with the hyperuricemia. Elevated ESR (91.6%), because it is an inflammatory marker and gout is an inflammatory disease. there is no effect on DLC, as DLC changes was present in 7 patients (19.4%).

Discussion on effect of therapy

The percentage relief in all subjective parameters are *Kandu*-14.29%, *Daah*-72.73%, Intensity of pain-71.26%, Frequency of pain- 28.71%, Duration of pain- 43.14%, *Toda*-70.59%, *Shotha*-

89.66%, *Stabdhta*- 69.23%, *Twak Vaivarnaya*-66.63%. In objective parameters, statistically Significant result was found in S. Uric acid, ESR, monocytes and eosinophils as value of p is found in between 0.01 and 0.05 (p>0.01 & <0.05) in each. Statistically non-significant result was found in lymphocytes, basophils and neutrophils as value of p>0.05 in each. The percentage relief in all objective parameters are Serum Uric acid-27.99%, Lymphocyte- 2.53%, Monocyte- 80.92%, Eosinophils-27.06%, Basophils- 0.00%, Neutrophils- 5.29%, ESR- 53.43%.

Probable mode of action of *Trivritadi Kwath*

Trivritadi kwath is a combination of three herbs namely *Trivrit*, *Vidarikand* and *Gokshura*. *Trivrit* has *Tikta*, *Katu Rasa* (bitter and pungent in taste) and *Katu* (bitter) *Vipak* (post digestive effect), *Ushna* (hot) *Virya* (potency), *Laghu* (light), *Ruksha* (rough) *and Tikshna* (sharp) *Guna* (quality) *and* has *Anulomak* (carminative), *Virechak* (laxative), *Shothahar* (anti-inflammatory) and *Shoolahara* (analgesics) properties [4]. *Vidarikand* and *Gokshur* has sweet in taste, *Guru* (heavy) and *Snigdha* (unctuous) *Guna* (quality), cold in potency, *Madhur* (sweet) *Vipak* [5]. *Vidarikand* has *Vatapitta shamak*, *Shonitasthapan*, *Mutral* (diuretic), *Dahaprashamak* (reduces burning) and *Shothaghna* (reducing swelling) properties. *Gokshur* has *Vata-pitta Shamak*, anti-inflammatory, *Vedanasthapak*, diuretic and carminative properties [6]. *Gokshur* works as a natural uricosuric [7]. All these properties of *Trivritadi kwath* yield high efficacy in the management of *Vatarakta*.

Fig 3: *Samprapti Vighatan* (breaking of pathogenesis)

Conclusion

It is concluded that *Trivirtadi Kwath* is effective in managing the patients of *Vatarakta* by breaking its pathogenesis. Complete relief was found in the patients which were acute i.e., newly diagnosed and who followed strict instructions of diet. No adverse effect of the therapy was noted during the trial and in the follow up period.

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