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Research Article

EFFICACY OF *VIRECHANA* IN TREATING RAISED URIC ACID LEVEL IN GOUTY ARTHRITIS - A COHORT STUDY

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ABSTRACT

Vatarakta is a disorder predominantly affecting the joints with presenting symptoms like *Sandhishula* (pain), *Sandhi shotha* (swelling), *Sandhi Graha* (stiffness) *Sparsh-asahishnuta* (tenderness). *Vatarakta* in modern view has similarity with Gouty Arthritis. Gout and gouty arthritis though much prevalent in the western countries, it is not uncommon in India. The occurrence of Gout and gouty arthritis is common in the post pubertal males, and post-menopausal females. Hyperuricemia is a predisposing factor for the manifestation of gouty arthritis. The prevalence of gout varies between populations but is around 1% with a strong male predominance (10:1). As treatment given in modern is quite toxic this study on *Vatarakta* was taken up to find out the possible effects of Ayurvedic therapies in its management. *Virechana* is one of the *Shodhana chikitsa* in the management of *Vatarakta*. The objectives of the study were to study the efficacy of *Virechana* in reducing the raised uric acid level. **Materials and Methods**: 20 patients were included in this clinical study. Subjects were given *Panchatikta guggulu ghrita* for *Snehapana*, followed by *Sarvanga abhyanga* with *Balaguduchyadi taila* and *Virechana* with *Nimbamrita Eranda taila*. The total duration of the study was 7 days and follow up was done after 1 week. The assessment was carried based on subjective parameters like *Sandhishoola*, *Sandhigraha* and objective parameters like *Twak Vaivarnyata*, *Sparshasahatwa*, serum uric acid level, and McGill's pain scale was done before and after treatment. Results were statistically analyzed using Wilcoxon signed-rank test. **Results:** Significant results were observed in subjective parameters such as *Sandhishoola* (85.6%) and *Sandhigraha* (75%) as well as objective parameter like twak *Vaivarnyata* (86.4%), *Sparshasahatwa* (90%), 32.8% serum uric acid level (32.8%), Mac gills pain scale (50%). **Conclusion:** *Virechana* with *Nimbamritadi eranda taila* was effective in the management of Gouty arthritis.

INTRODUCTION

Gout is an inflammatory response to the (MSU Manosodium Uraete) crystals formed secondary to hyperuricaemia[1] i.e., gout is genetic or acquired disorder of uric acid metabolism. The major clinical manifestations are acute synovitis, chronic erosive and deforming arthritis, tophi, nephrolithiasis, interstitial nephritis and hypertension.

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The epidemiology of hyperuricaemia is different from that of gout. Mean uric acid (urate) concentrations are age-and sex-related. Prepubertally, in males the mean concentration is around 3.5mg/dl, with a steep rise to 5.2mg/dl at puberty. In females, the rise is appreciated only after menopause (up to 4.7mg/dl). Hyperuricaemia has been defined as a serum or plasma urate concentration greater than 7.0mg/dl in males and 6.0mg/dl in females. Gout is rare in children and premenopausal females. The peak age of onset in males is between 40 and 50 years. The prevalence of hyperuricaemia varies amongst communities. The incidence of gout varies in populations from 0.2 to 3.5 per 1000, with an overall prevalence of 2.0 to 26 per 1000. Oriental races living

in the West show an increased prevalence of gout, depicting the importance of environmental factors.

Risk Factors

Serum uric acid concentration is the single most important determinant of the risk of developing gout. With normal renal function, its blood concentration depends mainly on the breakdown of nuclear proteins and dietary purine load. Provocative factors include diuretics, alcohol, dietary excesses, surgery, trauma, sepsis, stress, starvation and dehydration.

As per the symptomatology and pathogenesis *Vatarakta* can be correlated to Gouty Arthritis in modern science because of the presenting symptoms like *Sandhi Shula*, *Sandhi Shotha*, *Vaivarnata* etc.

Dietary habits and life style modalities plays a major role in the manifestation of *Vatarakta*. Habitual intake of food stuffs is always useful but improper way of consuming makes it always harmful to the body. Therefore they should be avoided. *Nidana* is one of the main treatment aspects, mainly *Ahara Hetu*, *Vihara Hetu*, *Anya Hetu* and *Mithyahara Vihara* which are known to be responsible in the manifestation of disease *Vatarakta*. While narrating the *Nidana* for *Vatarakta* it is explained that excessive intake of *Kulattha* (horse gram), *Masha* (black gram) and *Nispava (*flat bean) are also one among causes.[2] These cereals contain more protein (purine); excessive intake of these grains may lead to production of increased uric acid as it is the end product of purine metabolism. Likewise *Mamsa Varga* (meat), *Madya Varga* (alcohol), *Dadhi* (curd) etc also contain proteins may lead to *Vatarakta* (gout).

According to *Acharya*'s other than these *Nidana*' *Haya Ustradi Yana*, *Adhva*, *Jala Kreeda* etc are the specific *Nidana* of *Vatarakta*.[3] Likewise now a days, one who travels more over the vehicles may be more susceptible to disease *Vatarakta*, because continuous travelling may lead to the venous pooling in the distal parts of the lower limbs. The venous pooling i.e., the blood stays more in these parts because of gravitational force, this stagnated blood with raised levels of serum uric acid may lead to the deposition of uric acid crystals in the joints.

Depending upon the superficial or deeper *Dhatu* involved, the *Vatarakta* is of two types. When the pathogenesis of *Vatarakta* is limited to *Twak* and *Mamsa dhatu* it is regarded as *Uttana* (*Anavagadha*) *Vata rakta*. Involvement of deeper *Dhatu* like *Asthi Majja* and *Sandhi* signifies the *Gambhira* (*Avagadha*) *Vatarakta.* [4]

The symptoms like *Kandu*, *Daha*, *Ruka*, *Ayama*, *Toda*, *Sphurana*, *Shyava*/*Rakta tvaka* and such other symptoms probably limited to the *Twak* indicates the *Uttana Vatarakta*.

Persistent hard swelling of the affected part, suppurations, involvement of *Sandhi asthi* and *Majja*, deformities like *Vakrata*, *Khanja* and *Pangu* all these point towards the *Gambhira Vatarakta*.

The treatment of *Vatarakta* comprises of *Bahirparimarjana* and *Antahparimarjana chikitsa*. *Abyanga* is directed at treating the *Dosha vata* and *Rakta* and *Samprapti vighatana*. Accordingly, in *Uttana Vatarakta*[5] - *Alepa*, *Abyanga*, *Parisheka*, *Upanah* and in *Gambhira Vatarakta* - *Virechana*, *Basti*, and *Snehapana*. *Virechana* is administered in cases of *Pittaja* and *Kaphaja Vyadhi*. It is also useful in *Vataja Roga* and *Rakta Dushti Janya Vikara*. The *Guna* of *Virechana* drugs are *Laghu*, *Teekshna*, *Vyavayi* and *Vikasi*, *Adhobhagahara* in *Prabhava*.

AIMS AND OBJECTIVES

1. To evaluate the efficacy of *Virechana* in treating gouty Arthritis.

Objective

To evaluate the efficacy of *Virechana* in treating raised uric acid level in gouty arthritis.

MATERIALS AND METHODS

Selection of Patients: Subjects attending the OPD and IPD of Post Graduate Departments of *Kaya Chikitsa*, *Ayurveda Mahavidyalaya*, and Hubli, were taken randomly for the study. Regular informatives were placed in the local print media to create awareness about the condition and its management. The subjects having any one or more symptoms of *Vatarakta* like *Sandhi Graha* (stiffness of joints), *Sandhi shoola* (joint pain), *Shotha* (inflammation), *Vaivarnata*, and *Sparsha Asahatava* (tenderness) McGill pain scale for pain assessment were screened for the present clinical trial. Patients having serum uric acid level between 6mg/dl to 11mg /dl were diagnosed as having gouty arthritis. A total of 20 patients fulfilling the inclusion criteria were included in the study in a single group. The parameters of base line data on pre and post medication were compared with gradations for assessment. Statistical tests were applied and assessments were made. Special clinical Performa, based on the criteria of selection and parameters, for assessment of subjects were prepared. Informed consent of all the patients registered, were duly taken before starting the interventions.

Inclusion Criteria

a. Subjects presenting with clinical features of *Vatarakta*/Gouty Arthritis
b. Subjects of either sex between age group of 15-75 yrs.
c. Subjects suitable for *Virechana karma*.

d. Subjects showing the uric acid level above 6mg/dl in male and 7mg/dl in female (above biological range).

Exclusion Criteria

a. Subjects with uncontrolled diabetes, systemic disorders and endocrine disorders.
b. Subjects with autoimmune disease of joints.
c. Subjects with infection and communicable diseases.
d. Subjects not suitable for *Virechana karma*.

Diagnostic Criteria

Diagnosis will be done based on the clinical features of *Vatarakta*.

Investigations

Routine hemogram such as Hb% (hemoglobin), total leukocyte count differential leukocyte count, erythrocyte sedimentation rate, platelet count, bleeding time and clotting time was done. Biochemical investigations such as fasting blood sugar, postprandial blood sugar were done. Urine analysis for routine and microscope was done. Serum uric acid test was done before (BT) and after treatment (AT).

Treatment Protocol

In the present study, the treatment duration was 1 week. *Snehapana* was done for 3-5 days followed by *Virechana karma*.

Assessment Criteria

Parameter Findings Points
Sandhishoola (pain) None 0
Mild 1
Moderate 2
Severe 3
Sandhi graham (stiffness)- No stiffness 0
Stiffness occasional, relieved by its own 1
Stiffness relieved by movements 2
Stiffness relieved by medication 3
Vaivarnyata- No discoloration 0
Occasional, relieved by its own 1
Present, but relieved by relief in swelling 2
Persistent, not relieved by medication 3
Sparshasahatwa (tenderness)- No tenderness 0
Patient complains of pain 1
Patient complains of pain and winces 2
Patient complains of pain, winces and withdrew joint 3
Serum Uric Acid below 6.0mg/dl 0
6.1-8mg/dl 1
8.1-10mg/dl 2
More than 10.1mg/dl 3

Posology

Deepana pachana was performed by the administration of *Hareetakyadi churna* 5gm twice a day before food with *Ushnodaka anupana* till symptoms of appropriate *Agni deepana* was attained. There after *Snehapana* was done with *Panchatikta ghruta guggulu* in *Arohana krama*. On the first day subjects were given *Hrasiyasi matra* of *Sneha* i.e., 30ml in empty stomach and based on the duration taken for digestion, the dose was increased each day and soon after *Samyak Snigdha lakshanas* seen, the *Snehapana* was discontinued. *Samyak Snigdha lakshana* were achieved for average 5-7 days. During the gap of 3 days and on the day of *Virechana*, *Sarvanga abhyanga* was done with *Balaguduchyadi taila* followed by *Bashpsweda*. *Nimbamritaeranda taila* was administered as *Virechana yoga* considering the *Koshtha* of the subjects in the morning. Throughout the day subjects were observed for *Samyak virechana lakshana. Samsarjana Karma* was followed based on *Pravara*, *Madhyama*, and *Avara Shuddhi*.

Criteria of Assessment

Subjective Parameters: *Sandhi Graha* (stiffness of joint), *Sandhishoola* (joint pain).

Objective Parameters: *Vaivarnyata*, *Sparsha Asahatva* (tenderness) McGill pain scale for pain assessment, serum uric acid before and after treatment.

OBSERVATIONS AND RESULTS

Table 1: Effect of Treatment on *Sandhi Graha* (stiffness of joint)

Assessment Observations Recorded on	Descriptive			Paired samples test		
	N	Mean	±SD	Change in %	Wilcoxon signed rank test	P
BT	20	2.64	0.485	1.98 (75)	Z=6.351	<0.0001*
AT	20	0.66	0.688			
HS - Highly significant						

Table 2: Effect of Treatment on *Sandhishoola* (joint pain)

Assessment Observations Recorded on	Descriptive			Paired samples test		
	N	Mean	±SD	Change in %	Wilcoxon signed rank test	P
BT	20	2.22	0.840	1.9 (85.6)	Z=6.297	<0.0001*
AT	20	0.32	0.513			
HS - Highly significant						

Table 3: Effect of Treatment on *Vaivarnyata*

Assessment Observations Recorded on	Descriptive			Paired samples test		
	N	Mean	±SD	Change in %	Wilcoxon signed rank test	P
BT	20	1.18	1.004	1.02 (86.4)	Z=-5.172	<0.0001*
AT	20	0.16	0.370			
HS - Highly significant						

Table 4: Effect of Treatment on *SparshaAsahatava* (tenderness)

Assessment Observations Recorded on	Descriptive			Paired samples test		
	N	Mean	±SD	Change in %	Wilcoxon signed rank test	P
BT	20	1.82	0.800	164 (90)	Z=-6.095	<0.0001*
AT	20	0.18	0.388			
HS - Highly significant						

Table 5: Effect of Treatment on McGill's Pain Scale

Assessment Observations Recorded on	Descriptive			Paired samples test		
	N	Mean	±SD	Change in %	Wilcoxon signed rank test	P
BT	20	2.80	1.050	1.4 (50)	Z=-6.002	<0.0001*
AT	20	1.40	0.833			
HS - Highly significant						

Table 6: Effect of Treatment on Uric acid (mg/dl)

Assessment Observations Recorded on	Descriptive			Paired samples test		
	N	Mean	±SD	Change in %	Wilcoxon signed rank test	P
BT	20	8.72	1.230	2.86 (32.8)	Z=-5.770	<0.0001*
AT	20	5.86	1.325			
HS - Highly significant						

Effect of Therapy on Subjective Parameters

In the present study, the study revealed that 75% of subjects got relief in *Sandhigraha*, 85.6% got relief in *Sandhishoola*.

Effect of therapy on Objective parameters

In the present study, 86.4% subjects improved in *Twak vaivarnyata*, 90% of subjects showed reduction in *Sparshasahatwa*, 32.8% subjects showed reduction in serum uric acid level, 50% of subjects showed relief in Mc Gills pain scale.

DISCUSSION

Sandhi (joint) is a very important structure in the body of human being - without the joints, the locomotion; the characteristic feature of the animals would not have been possible. *Vatarakta* is one of the prominent disorders affecting the joints. Gouty arthritis is a condition in which serum uric acid is raised and gets deposited in the small joints affecting the mobility of the joint along with pain full conditions. Uric acid is the end product of purine metabolism. Abnormality in the production of purine nucleotides leads to the increase synthesis of uric acid. The usual or normal synthesis of purine nucleotides occurs along two pathways-referred to as [6]:

1. Denovo pathway
2. Salvage pathway

De novo Pathway

This involves the synthesis of purine and then uric acid from non-purine precursors. The starting substrate for this pathway is ribose with phosphate. Ribose with phosphate is converted into purine nucleotide through a series of intermediates. This pathway is controlled by a complex assay of regulatory mechanism. The important regulatory mechanism are,

a) The negative or feedback regulator of the enzymes amido phosphoribosyl transferase and 5-phosphoribosyl 1-pyrophosphate (PRPP) synthetase by purine nucleotide.
b) The allosteric activation of amidoPRT by its substrate 5-Phosphoribosyl 1-pyrophosphate (PRPP).

Salvage Pathway

The free purine bases are derived from catabolism of nucleotides, breakdown of nucleic acids and dietary intake.

In salvage pathway the purine bases are utilized for the synthesis of purine nucleotides. The free purine bases hypoxanthine, guanine and aldenine condense with PRPP to the purine nucleotide precursors of uric acid. These reactions are catalyzed by two transferases viz Hypoxanthine Guanine Phosphoribosyl Transferase (HGPRT) and Adenine Phosphoribosyl Transferase. (APRT)

A deficiency of the enzymes HGPRT leads to increased synthesis of purine nucleotides, through de-novo pathway and hence increased production of uric acid as we see the *Samprapti* of *Vatarakta, Rakta dhatu* in its *Dhatwavrita Vikarmakari sthiti*, will be showing *Vriddhata* or *Sama dhatu lakshanas* which in either way hampers the *Dhatuushmata/Dhatwagni* causing improper metabolism-enzymatic actions or improper *Sara mala vibhajanam;* forming *Aprinamita dhatus* along with over or lesser production of *Sara bhaga* and *Malabhaga.*

When *Rakta* gets vitiated *Pitta* will also be, due to their *Samanyata* in *Guna* and *pitta* is also *Mala* of *Rakta dhatu.*

Keeping these views in mind, when we see to the details of serum uric acid, which is a metabolic waste of purine metabolism (*Mala bhaga*) which is seen in *Rakta*. Increased serum uric acid levels (hyperuricemia or *Adhika mala bhaga*) which results in many further diseases like gouty arthritis or *Vata rakta.*

Ama pachana* before *Virechana

Prior to administration of *Snehapana*, the body should have *Nirama* stage, which is achieved by *Ama Pachana* and *Agni Deepana*. The reason behind it is that, the qualities of *Snehana Dravya* need a platform for its action. These drugs which are digestives and carminatives stimulate enzymatic secretions, HCL secretions, pancreatic and bile secretions, thereby proper assimilation of *Sneha* will occur. Hence the *Hareetakyadi Churna* regulates the function of *Samana* and *Apana Vata* and *Kledaka Kapha*. With this treatment it was observed that most of the patients attained *Samyak Mala Pravrutti*, improvement in *Agni*. The ingredient of this *Choorna* all are *Agnideepaka* and *Mruduvirechaka*. *Hareetaki* and *Amalaki* are *Srotoshodhaka*. By their *Mruduvirechaka* and *Srotoshodhaka* property *Hareetaki* and *Amalaki* does the *Srotoshodhana* and hence clear the *Srotas*.

Snehapana

Pancha tikta Guggulu ghrita is the *Sneha* used for *Snehapana*. This soothes and lubricates the *Srotas* and disintegrates the accumulated *Dosha* and brings to the *Koshta* for their easy evacuation. *Nimba*, *Guduchi*, *Patola* all are *Tikta rasatmaka* and they are *Swedhagna, Kandughna, Kushtaghna*. *Nimba* is *Krimihara* and hence does the *Krimighna* activity. *Patola* by its *Ushna* and *Snigdha guna* reduces the *Rookshata*. *Tikta rasa* is formed by *Vayu* and *Prithvi mahabhoota* and *Rooksha*, *Sheeta* and *Laghu gunatmaka*. It is *Kleda shoshaka*. By its *Mrudu* and *Vishada guna* it enhances *Vata*. *Guggulu* is having anti-inflammatory property and hence is beneficial in *Sandhi* and *Asthi majjagata Vikara*. It

mainly acts on body wastes (*Kleda*), fat (*Meda*), *Lasika* (plasma), *Rakta* (blood), *Pitta, Sweda* (sweat) and *Shleshma*. *Nimba* has chemical composition of Nimbin. Nimbidin possesses significant dose dependent anti-inflammatory activity and significant anti-ulcer effect. *Guduchi* (*Tinospora cordifolia)* having Berberin and Tinosporin mainly acts as antioxidant and immune potentiating thus cell layers during disease pathology are improved by this drug. *Vasa* (*Adhatoda vasica*) the Vascicinone has anti- histaminic property as well as it is anti-oxidant and anti-inflammatory. *Patola* (*Trichosanthes dioica*) has anti-oxidant and *Nidigdhika* (*Solanum xanthokarpum*) has anti-histaminic property. *Guggulu* (*Commiphera mukul*) has excellent property to act on *Vikrut Kleda* (abnormal body wastes) and *Meda* (fat), *Mamsa Dhatu* (flesh) as it has *Katu, Tikta, Kashaya*, *Madhura Rasa, Ushna Veerya* and *Katu vipak. Guggulu* stimulates body activity to build up immune system. *Ghrita* has lipophilic action so helps in ion transportation to a target organ. This lipophilic nature of *Ghrita* facilitates entry of drug into cell and its delivery to mitochondria, microsome and nuclear membrane.

Probable mode of action of *Panchatikta Ghrita Guggulu* can be considered as, all properties of this drug acts on cellular level of skin decreasing keratinization of skin layer thus be helpful in *Twak Vaivarnyata* in *Vatarakta.*

The properties of *Bala Guduchyadi Taila* used for *Abhyanga* in *Vatarakta*

The *Taila* reduces *Shoola*. Most of *Dravyas* are of *Sheeta veerya* it is *Daha prashamaka*, *Rakta prasadaka* and it has *Snigdha Guna, Tikta Madura*, *Kashaya Rasa*; it acts as *Pitta* (also *Rakta*) *Shamaka*. As it is *Vata hara Balya*, *Pitta Prasadaka,* it is best in *Vatarakta*. When used externally as *Abhyanga* it works with the theory that *Taila* helps in formation of lipoidal bond with other drugs thus helps in the penetration of drug molecules. Hence it increases the rate of transdermal drug delivery. It improves local blood and lymphatic circulation and thereby improving local tissue metabolism. It reduces inflammation by modifying secretion of various inflammatory mediators like histamine etc. It relaxes local stiffness by physical effect of heat and thereby reduces pain, anti-inflammatory and analgesic effect of *Bala, Guduchi* and other herbs in the formulation. The *Veerya* of drugs present in *Sneha* is absorbed through skin which is the site of *Brajaka pitta* and can reach up to different *Dhatus*.

Swedana

Swedana stimulates *Bhrajaka Pitta* and *Vyana Vata*. It also enhances circulation of blood, thus carries toxins lying in the tissues to excretory organ such as skin, bowel etc. Thus the toxins are driven out from the tissues and brought to the bowels naturally, from where they are subsequently evacuated by means of *Shodhana Karma.*

Virechana

Virechana Dravya act either by a bulk affect or by irritant or stimulant action on the intestinal wall and so excites the Auerbach's plexus and cause increased peristalsis. The mucosa of the intestinal tract becomes extensively irritated and its rate of secretion becomes greatly enhanced. In addition the mobility of the intestinal wall usually increases many fold. As a result large quantities of fluid are made available for washing these irritating agents and at the same time strong propulsive movements propel this fluid forward.

The *Udbhava Sthana* of *Vatarakta* is *Amashaya* (*Kapha Pitta Sthana*) and *Pakwashaya* (*Vata Sthana*). If these are cleaned by *Virechana* process the catabolic toxins can thus be removed.

Nimbamrita Eranda Taila was used for *Virechana* as generally *Sneha Virechana Yoga* is *Mrudu* in nature. It is *Sukha Virechaka* drug and acts as *Pitta Shamaka* and *Vatanulomaka.*

CONCLUSION

The disease *Vatarakta* is due to vitiated *Vata* and *Rakta* the entities which move all over the body get obstructed by one another and get accumulated in the smaller joints leading to the symptoms of *Sandhishoola, Sandhigraha, Sparshasahatwa,* and *Twak Vaivarnyata*. This disease is correlated to Gouty Arthritis, which is manifested due to accumulation of monosodium urate crystals in the joints which causes pain in the joints, and causing arthropathy. The accumulation of uric acid is what differentiates it from other joint disorders. Uric acid is a metabolic waste formed by excessive consumption of purine rich food. As uric acid is a metabolic waste *Shodhana Chikitsa* would be effective in reducing uric acid. In this study *Virechana* with *Nimbamrita Eranda Taila* was significant in reducing serum uric acid level in gouty arthritis. *Virechana* is one type of *Shodhana Karma*. This is the better option in eradicating the diseases originated from the vitiated *Pitta*. It is less stressful procedure and has least possibility of complications. Hence, it is widely used as *Shodhana* therapy. *Virechana* is the best treatment for *Paittika* disorder because it eliminates the vitiated *Pitta* from its root. Thus there is no chance of vitiation of *Pitta* anywhere in the body as it is eliminated from its *Moola Sthana. Virechana* is effective in *Paittika* disorder and for *Pitta* combined with *Kapha* or *Kapha* in *Pitta Sthana.*

REFERENCES

1. Y P Munjal, API Text Book of Medicine, 9th edition 2012 P No 1822
2. Pt. Kashinath Sastri, Dr Gangasahaya Pandeya, Charaka samhita of Agnivesha, Chaukambha Sanskrit Sansthan, Varanasi, 2012 Cha. Chi 29 P No 730
3. Pt Kashinath Sastri, Dr Gangasahaya Pandeya, Charaka samhita of Agnivesha, Chaukambha Sanskrit Sansthan, Varanasi, 2012 Cha. Chi 29 P No 730
4. Pt Kashinath Sastri, Dr Gangasahaya Pandeya, Charaka samhita of Agnivesha, Chaukambha Sanskrit Sansthan, Varanasi, 2012 Cha. Chi 29 P No 732
5. Pt Kashinath Sastri, Dr Gangasahaya Pandeya, Charaka samhita of Agnivesha, Chaukambha Sanskrit Sansthan, Varanasi, 2012 Cha. Chi 29 P No 736
6. CRW Edwards, Davidson's principals and practice of medicines, 1995P NO884-885

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