

**MANAGEMENT OF VATARKTA (GOUT) IN AYURVEDA: REVIEW**Neetu Sharma\*<sup>1</sup>, N. R. Singh<sup>2</sup> and Jitendra Varsakiya<sup>3</sup>

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**ABSTRACT**

Today's lifestyle of peoples due to urban life style, stressful schedule, irrelevant diet habit of foods all these factors affects metabolism as well as the health of human and they suffered from lots of metabolic disorders. Gout is one of them known as inflammatory arthritis in men aged above 50. Gout is a heterogeneous disorder that results in the deposition of uric acid salts and crystals around joints and soft tissues. Gouty arthritis comes under the purview of *Vatarakta*. In comprehensive science anti-inflammatory drugs, NSAIDS and glucocorticosteroid are used to treat the disease, which have a lots of side effect and it is cost effective also. There is need to explore more efficacious and radical cure to this illness. *Ayurveda* has much potential in such disorders. **Aim:** To review the role of *Ayurveda*

medicines in the management of *Vatarakta*. **Material and Method:** Here is effort to do by the review of research works done on *Vatarakta* with herbal medicine and know about the effective treatment of ailment. **Discussion:** Result shows effective improvements in symptoms like *Shandhishoola*, *Shotha*, *Twak Vaivarnya* etc. Both *Shodhana* and *Shamana Chikitsa* are best in treatment for *Vatarakta* due to pacifying *Vata* and *Pitta Dosha* which are the main cause of pathogenesis of this disease.

**KEYWORDS:** *Ayurveda*, gout, hyperuricemia, serum uric acid, *Vatarkta*.

## INTRODUCTION

Gout is the most common cause of inflammatory arthritis in human aged more 50, affecting approximately 1-2% of adult men in the western world. The prevalence is 0.12% as per International League of Nations Against rheumatism, Community oriented Program for control of Rheumatic Disease (ILAR COPCORD) study in india.<sup>[1]</sup> Gout describes a number of disorders in which crystals of monosodium urate monohydrate derived from hyperuricaemic body fluids give rise to inflammatory arthritis, tenosynovitis, bursitis or cellulitis, tophaceous deposits, urolithiasis and renal disease.<sup>[2]</sup> The status of *Vatarakta* often compared with Gout in the allied sciences due to outstanding similarities.

*Vata* is main *Dosha* because of its control on other two *Dosha* and six distinguishing features like spreading, quick action, vigour, capacity of vitiate other *Doshas* and the power to create the maximum number of diseases.<sup>[3]</sup> Meanwhile it is also assumed that the life of living beings totally depends on *Rakta*.<sup>[4]</sup> *Vatarakta* is association of vitiated *Vata* and vitiated *Rakta*.<sup>[5]</sup> In every *Samhita* *Vatarakta* is always explained after *Vatavyadhi Chikitsa*. It is defined as the condition in which the aggravated *Vata* is obstructed in the path by aggravated *Rakta*. In Classics states that it is a disease can starts from *Pada Moola* sometime it can also starts from *Hasta Moola* and *Ashukari* nature of *Vata* makes the spreading of the disease all over the body similar to rat poison.<sup>[6]</sup>

In modern treatment, anti-inflammatory drugs, NSAID's, glucocorticoids are used to treat Gouty Arthritis symptomatically which have many adverse effects particularly in presence of renal insufficiency and gastrointestinal disorders making the disease chronic after prolong usage. Therefore, there is a definite need to explore more efficacious and radical cure to this illness. *Ayurveda* has much potential in such disorders.

## AIMS AND OBJECTIVES

To evaluate the role of traditional medicine to manage the disease *Vatarakta*.

## MATERIAL AND METHODS

Relevant *Ayurveda* and Modern literature, available information on internet were searched. The result on search is described here after. Here are 6 research works on used different kind of herbal drugs have been conducted.

## Criteria for the assessment

<i>Sandhishoola</i> (Pain in joints)	<ul style="list-style-type: none"> <li>• No pain</li> <li>• Mild pain</li> <li>• Moderate pain</li> <li>• Severe pain</li> </ul>	0 1 2 3
<i>Sandhishotha</i> (Oedema)	<ul style="list-style-type: none"> <li>• Absent</li> <li>• Mild</li> <li>• Moderate</li> <li>• Severe</li> </ul>	0 1 2 3
<i>Kandu</i> (Pruritis)	<ul style="list-style-type: none"> <li>• No localized itching</li> <li>• Mild localized itching</li> <li>• Moderate localized itching</li> <li>• Severe localized itching</li> </ul>	0 1 2 3
<i>Twak vaivarnya</i> (Discolouration of skin)	<ul style="list-style-type: none"> <li>• No discolouration</li> <li>• Mild discolouration</li> <li>• Moderate discolouration (shiny overlying skin)</li> <li>• Severe discolouration (coppery discolouration)</li> </ul>	0 1 2 3
<i>Vidaha</i> (Burning sensation)	<ul style="list-style-type: none"> <li>• No burning sensation</li> <li>• Mild</li> <li>• Moderate</li> <li>• Severe</li> </ul>	0 1 2 3

## Drug Posology

<i>Punarnava Amrita Guggulu</i>	No. of patients – 30, Tab of <i>Guggulu, Amrita, Punarnava, Triphala</i> (1:2:2:3) mixture-500mg tablet administered orally thrice a day with <i>Amritadi Kashaya Anupana</i> 70 ml for each dose for 1 month.
<i>Amrita Guggulu</i>	No. of patients - 30 <i>Amrita Guggulu</i> 500mg administered orally thrice a day with <i>Anupana Amritadi Kashaya</i> 70ml for 1 month
<i>Guduchi Yoga</i>	No. of patients – 30 <i>Guduchi Yoga</i> 2gm ( <i>Guduchi Kanda</i> 1.5gm and <i>Trapush</i> juice extract powder 0.5gm) twice a day after food with lukewarm water for Duration of 12 weeks(3 Months).
<i>Guduchi Siddha Yoga Basti and Shiravedha</i>	Group A- <i>Shiravedha</i> twice with an interval of 11days, No. of patients- 20, in Group B- <i>Guduchi Siddha Yoga Basti</i> for 8 days(5 <i>Anuvasana</i> , 3 <i>Niruha</i> ), No. of patients- 20 for duration of 24 days
<i>Shodhan and Shaman Chikitsa</i>	No. of patient- case study on 1 patient, 45years old male <i>Shadhana- Nitya Virechana</i> with Eranda oil mixed with milk, <i>Kaishore Guggulu</i> 500mg tab with luke warm water thrice a day, <i>Dashmoola Siddha Ksheera Paka</i> once in the morning for duration of 40 days.

## RESULT

Symptoms	Used Drug				
	<i>Amrita Guggulu</i> <sup>[7]</sup>	<i>Puarnav Amrita Guggulu</i> <sup>[8]</sup>	<i>Guduchi Yoga</i> <sup>[9]</sup>	<i>Kaishore Guggulu Dashmoola Siddha Ksheer Paka with Nitya Virechana</i> <sup>[10]</sup>	<i>Yogaraj Guggulu &amp; other Drug with Shiravedha, Virechana</i> <sup>[11]</sup>
<i>Sandhishoola</i> (Joint pain)	66.75%↓	65.11%↓	67%↓	Grade 3 to 0	Grade 4 to 0
<i>Daha</i> (Burning sensation)	63.63%↓	87.5%↓	76.8%↓	Grade 3 to 1	Grade 3 to 1
<i>Shotha</i> (Swelling)	85.7%↓	87.5%↓	50%↓	Grade 3 to 1↓	Grade 3 to ↓ 0
<i>Raga</i> (Redness)	88.75%	55.55%↓	61.7%↓	Grade 3 to 0	-
Serum uric acid	38.09%	43.43%↓	55.8%↓	67.5%↓	59.9%↓

By review the all works it shown the results of drugs like *Amrita Gugglu* showed 66.75% decrease in the *Shandhishoola*, 63.63% decrease found in burning sensation, 85.5%, swelling was reduce by 85.5%, redness around the joint decrease by 8.75%, and 38.9 % uric acid was fond decrease. The drug *Punarnava Amritadi Gugglu* decrease *Sandhishoola* by 65.11%, reduce burning by 87.5%, effective to reduce swelling around joints by 87.5%, decrease redness by 55.55%, and 43.43% decrease the uric acid level. *Guduchi Yoga* decrease *Sandhishoola* by 67%, reduce burning by 76.8%, effective to reduce swelling around joints by 50%, decrease redness by 61.7%, and 55.8% decrease the uric acid level. Effect of *Kaishore Guggulu Dashmoola Siddha Ksheer Paka* with *Nitya Virechana* shown the effect on *Sandhishoola* decrease by grade 3 to 0, reduced burning by grade 3 to 1, reduce swelling by grade 3 to 1, reduce redness by grade 3 to 0 and decrease the serum uric acid level by 67.5%. Work on *Yogaraj Guggulu with Shiravedha, Virechana* was found the effect to reduce *Sandhi Shoola* by grade 4 to 0, reduced burning by grade 3 to 1, reduce swelling by grade 3 to 1 and decrease the serum uric acid level by 59.9%.

## DISCUSSION

*Vata Dosha* when obstructed by Vitiated *Rakta Dhatu*, further becomes virulent leads to the abnormality of *Rakta Dhatu* disease called *Vatarakta*.<sup>[12]</sup> According to texts *Purvaroop* of disease includes *Atisweda*(Excessive perspiration), *Asweda*(Absence of perspiration), *Karshnya*(Blackness), *Sparshagyatva*(Anaesthesia), *Kshate Atiruk*(Severe pain on injury), *Sandhi Shaithilya*(Laxity in joint), *Aalsaya*(Lassitude), *Sadan*(Malaise), *Pidika udgam*(Appearance of boils), *Hasta pada sandhishu Nistoda*(Pricking pain) *Sphuran*(Quivering) *Shunyata*(Hyperasthesia) and *Kandu*(Itching), *Twak vaivarnya*(Altered

colour of skin), *Mandalotpatti*(Blisters).<sup>[13]</sup> Disease *Vatarkta* had synonyms i.e *Aadhyaroga*, *Khuddam*, *Vatabalasa*, *Vatashonita*.<sup>[14,15,16]</sup>

*Aadhyavata* - *Adhya* refers to rich person. This disease is common in rich persons, it is called as *Aadhyavata*. *Khudda* – As this disease involves the joints it is called as *Khuddavata* where this *Khudda* refers to joints. *Vatabalasa* – severity of this disease depends up on morbidity of *Rakta Dhatu* worsened by the obstructed *Vayu* and hence is known as *Vatabalasa*.

**Guduchi Yoga:** In *Ayurveda* text *Amrita*(*Tinospora Cordifolia*) is main drug for *Vatarakta*.<sup>[17]</sup> *Tinosporine* chemical constituents of drug is natural diuretic agent which is may aid in the excretion of serum uric acid.<sup>[18]</sup> *Guduchi* is having *Snigdha Guna* that helps to subside *Ruksha Guna* of *Vata*. Usually *Tikta Ras* converts into *Katu Vipaka* that cause *Vibandha*, but *Guduchi* exceptionally having *Madhura Vipaka* that expels *Purisha* etc. *Tikta Ras* subside *Rakta* and *Madhura Vipaka* subside *Vata*.<sup>[19]</sup> *Trapusha* (*Cucumis sativus*) *Trapusha* attributed *Mutrala* activity it is helpful in excretion of uric acid and helpful in renal calculi.<sup>[20]</sup>

**Amrita guggulu:** *Amrita Guggulu* have properties to inhibit xanthine oxidase. xanthine oxidase inhibitors decrease the production of uric acid by interfering with xanthine oxidase enzyme.<sup>[21]</sup> *Amrita Guggulu* also works for excretion of uric acid through uricosurics. Uricosurics increase the excretion of uric acid by reducing its re-absorption once the kidneys have filtered it out of the blood.<sup>[22]</sup> *Amrita* has anti-inflammatory<sup>[21]</sup> activity of *Amrita* which reduces the inflammation and symptomatic relief as well as its uricosuric action which excretes excess amounts of uric acid from the body.<sup>[23]</sup> *Amrita* also works other symptoms like fever<sup>[24]</sup> and stone forming tendencies.<sup>[25]</sup> **Guggulu**(*Commiphora Mukul*) has anti-inflammatory<sup>[26]</sup>, antioxidant<sup>[27]</sup>, uricosuric<sup>[28]</sup> and anti-rheumatiodal<sup>[29]</sup> activities which helps in breaking the patho-physiology of gout. Ingredients of *Amritta gugglu*, *Triphala* works as a xanthine oxidase inhibitor<sup>[30]</sup> like Allopurinol which suppresses the production of uric acid.

**Punarnava Amrita Guggulu:-** *Punarnava* (*Boerhavia diffusa*) has anti-inflammatory<sup>[31]</sup> action and has also diuretics<sup>[32]</sup> effect thus decreasing the amount of uric acid in blood. **Triphala** works as xanthine oxidase inhibitor.<sup>[33]</sup> **Haritaki** (*Terminalia Chebula*) has antioxidant<sup>[34]</sup> and adoptogenic<sup>[35]</sup> properties which help in recovery and healing of deformed tissue. **Vibhitaki** (*Terminalia Bellirica*) has nephro-protective function which retards the urolithiasis and dissolves already formed stones in kidney.<sup>[36]</sup> **Amalaki** (*Phyllanthus Emblica*)

having Anti-inflammatory, anti-pyretic, analgesic and antioxidant<sup>[37]</sup> properties. *Vidanga* (*Embelia Ribes*) its anti-oxidant<sup>[38]</sup> properties brings out regenerative changes in the deformed joints due to hyperuricemia induced gout. *Trivrita* (*Operculina terpepethum*) and *Danti* (*Baliospermum Montanum*) Both have anti-inflammatory and immunomodulatory<sup>[39]</sup> properties which help alleviating the symptoms of the disease and combating the hyper-immune responses. *Danti* possesses anti-oxidant properties which helps in rejuvenation of the joints along with breaking the pathology of the disease. *Chitraka* (*Plumbago Zeylanica*) has anti-inflammatory properties thus, helps in subsiding the inflammatory effect of disease.<sup>[40]</sup>

**Shiravedha**<sup>[41]</sup> *Shiravedha* is one such radical treatment especially concerned with *Dusta Rakta Nirharan* (the macroscopic removal of “morbid blood” from unwanted contexts or situation). In *Vatarkta*, impairment of purine metabolism, serum uric acid level is high and also there is inadequate excretion i.e. hyperuricemia. Bloodletting is dorsal venous arch causes reduction in uric acid. there may be release of angiotensin hormone which has got renal and adrenocortical stimulatory effect providing excretion of uric acid by kidneys. Local blood supply is improved by blood letting, local metabolism is improved, local drainage system is improved, fresh RBCs are produced which are active.<sup>[42]</sup> **Guduchi Siddha Yoga Basti**: As *Asthidhatu* involved in *Vatarkta*, it is assumed that the drug acting upon *Pureeshadhara Kala* will certainly act on the *Asthidhara Kala*, as *Kala* of both are the same. In addition the active principles of *Basti Dravya* administered reaches up to the *Grahani* which is related to both *Pittadharakala* and *Majjadharakala*. Hence action of *Basti* in terms of cleansing and nourishment of *Asthi Dhatu*, *Sandhi Majja* etc. and ultimately resulting in *Vatashamana*. Even more the combined action of *Guduchi Siddha Yoga Basti* like *Mutrala*, uricosuric properties increases the excretion of uric acid through urine.<sup>[43]</sup> 1/3<sup>rd</sup> of serum uric acid is excreted through the gut and the remaining 2/3<sup>rd</sup> through the kidneys generally. *Basti*, because of its laxative action, increases expulsion of uric acid through gut.

**Eranda Tail**: *Eranda* (*Ricinus Communis*) *Tail* is used for *Nitya Virechana* along with milk after assessing the *Kosta* of the patient. It helps for *Ama Pachana*, *Rechana* and *Vata Hara*.<sup>[44]</sup>

**Dashmoola** :- *Dashamoola* is having the property of *Kapha Vatahara*. It has analgesic, anti-inflammatory, anti-arthritic activity. 10 ingredients in *Dashamoola* may be serving different roles like adjuvant, carrier agent, stabilizer etc. The results of earlier studies in which *Dashamoola* has consistently shown efficacy in models of acute inflammation aimed at and

proved the possibility of prostaglandin synthesis inhibition as the probable mechanism of action.<sup>[45]</sup>

**Kaishore Guggulu:** It corrects the metabolism and checks on uric acid production. Further, it corrects the elimination process of uric acid in kidneys and improves kidney functions and helps in excretion of various chemicals through it. *Tikshna* and *Ushna* drugs like *Pippali* (Piper Longum), *Shunthi* (Zinziber Officinale), *Maricha* (Piper Nigrum), *Vidanga* (Embelia Ribes), *Danti* (Beliospermum Montanum), *Guggulu* (Commiphora Mukul) and so on, are present in *Kaishora Guggulu*, which helps in the pacification of *Vata* too which in turn leads to reduced morbidity of symptoms.<sup>[46,47]</sup> This is mainly used as antiallergic, antibacterial and blood purifying properties and usually supports healthy joints (in gout), muscles (in fibromylegia), in back pain and connective tissue<sup>[48]</sup>, *Raktaprasadana*.<sup>[49]</sup> **Chopchini** (Smilex Malabarica) is *Vednahara* (pain relief), *Shoethnashaka* (subside inflammation), very effective in *Vatavyadhi* and able to carry drugs in *Sukshma Srotasa*(micro channels). So, it helps in decreasing the pain and facilitates the penetration of drugs to deeper tissues like *Asthi Dhatu*.<sup>[50]</sup> **Guduchighan vati:** It has anti-inflammatory activity and also have *Rasayan* and *Dhatvagni Vardhaka* property.<sup>[51]</sup> **Gandharva Haritaki-** It has purgative and laxative action. It evacuates bowel and removes toxins from the body. *Haritaki* is gentral purgative, astringent(promotes the appetite or and assist in digestion),antioxidant and alterative (restoring healthy bodily functions).<sup>[52]</sup> **Gomutra tablet:** it contains concentrated form of *Gomutra* powder and *Triphala*. It has active antifungal, antibacterial and anticancer property. It controls cholesterol level and beneficial for constipation, blood pressure reduce weight.<sup>[53]</sup> *Triphala* have immunostimulatory effect on cytotoxic T cells and natural killer cells. It combats degenerative and metabolic disorders possibly through lipid peroxide inhibition and free radical scavenging.<sup>[54]</sup>

## CONCLUSION

*Vatarkta* is metabolic disorder according to modern which we can correlate with gout. All results of above mentioned show the noticeable improvement in all symptoms related *Vatarkta* after using *Ayurvedic* medicines. we can say that herbal source is best choice of treatment for management as well as diet and life style modification play a major role to manage of this type of metabolic disorder and it also not costly as well as improve the quality of life of patients.

## REFERENCES

1. www.apiindia.org chapter 98, Gout in Indian scenario.
2. Churchill Livingstone, Davidson`s Principles and practice of Medicine, edition 18<sup>th</sup>, chapter 12, Diseases of the connective tissues, joints and bones, Crystal deposition disease., 831.
3. *Ashtanga Hridya* of *Acharya Vagbhata*, “*VidyotiniTika*” commentary by Kaviraaj Atridevgupta, published at Chaukhamba Prakashana, Varanasi, *Sharir Sthan*, *Angavibhaga Adhyaya* 3/84,260.
4. *CharakaSamhita* of *Agnivesh* elaborated by *Charaka*, “*VidyotiniTika*”, vol 1, by Pt. Kashinatha Shastri, Dr.GorakhaNathaChaturvedi, Published at Chaukhamba Bharati Academy ,Varanasi -*Sutra Sthana,VidhishonitiyaAdhyaya*- 24/4,443.
5. *Charaka Samhita* of *Agnivesha* elaborated by *Charaka*, “*VidyotiniTika*”, vol 1, by Pt. Kashinatha Shastri, Dr.Gorakha Natha Chaturvedi, Published at Chaukhamba Bharati Academy ,Varanasi -*Sutra Sthana,Vidhishonitiya Adhyaya*- 24/4,443.
6. *Ashtanga Hridya* of *Vagbhata*, “*VidyotiniTika*” commentary by KaviraajAtridevgupta, published at ChaukhambaPrakashana, Varanasi, *NidanaSthan*, *VatashonitaNidana* 16/7,381.
7. www.ijpba.info, Sharma Usha, Sharma K Krishna “Role of *Amrita Guggulu* in the management of *Vatarkta*-A clinical trial”.
8. www.ayurpharm.com, Sharma Usha, Sharma K Krishna “Role of *Punarnava Amrita Guggulu* in management of *Vatarkta*- A Clinical trial”.
9. www.ijrap.net, HudedShivaprasad, Gummadi V Sonia“Evaluation of *Guduchi Yoga* in the management of *Vatarkta*(Gouty arthritis): A clinical study”.
10. Babu T Mahesh, A Vijyalakshmi, International Ayurvedic Medical journal, “*Ayurvedic* management of *Vatarkta*.s.r. to gout- A Case study”.
11. Jadhava Kartaram Dhnyaneshwar, Global journal of addiction & rehabilitation Medicine, “*Ayurvedic* management of *Vatarakta*(Gout); A case report”.
12. *SushrutaSamhita*, “*Ayurveda Tatva Sandipika*” by KavirajDr.AmbikaduttaShashtri, published at Chaukhamba Surbharati Prakashana Vrananasi, *NidanaSthana*– 1/ 43-44,300.
13. *Charaka Samhita* of *Agnivesha* elaborated by *Charaka* and redacted by Dridhabala, “*VidyotiniTika*”, vol 2, by Pt. Kashinatha Shastri, Dr.Gorakha Natha Chaturvedi – *Chikitsa Sthana*, *Vatashonita Chikitsaadhyaya*-29/16-19,821.

14. *Charaka Samhita* of *Agnivesha* elaborated by *Charaka* and redacted by Dridhabala, “*VidyotiniTika*”, vol 2, by Pt. Kashinatha Shastri, Dr.Gorakha Natha Chaturvedi – *Chikitsa Sthana, Vatashonita Chikitsaadhyaya-29/11,820*.
15. *Ashtanga Hridya* of *Vagbhatta*, “*VidyotiniTika*” commentary by Kaviraj Atridevgupta, *NidanaSthan, VatashonitaNidana 16/4,381*.
16. *Sushruta Samhita*, “*Ayurveda Tatva Sandipika*” by Kaviraj Dr.Ambikadutta Shashtri, published at Chaukhamba Bharati PrakashanaVraranasi, *NidanaSthana– 1/ 41,299*.
17. *Charaka Samhita* of *Agnivesha* elaborated by *Charaka* and redacted by Dridhabala, “*VidyotiniTika*”, vol 1, by Pt. Kashinatha Panday, Dr.Gorakha Natha Chaturvedi –*Sutra Sthana, Yajjapurushiyaadhyaya-25/40,467*.
18. <https://smjournals.com>, SM Group, “Effect of Lowering Uric Acid by Causlis Tinosporae Compound”
19. [www.ijrap.net](http://www.ijrap.net), HudedShivaprasad, Gummadi V Sonia “Evaluation of *Guduchi Yoga* in the management of *Vatarkta*(gouty arthritis): A clinical study”.
20. [www.ijpba.info](http://www.ijpba.info), Sharma Usha, Sharma K Krishna “Role of *Amrita Guggulu* in the management of *Vatarkta*-A clinical trial”.
21. [www.ijpba.info](http://www.ijpba.info), Sharma Usha, Sharma K Krishna “Role of *Amrita Guggulu* in the management of *Vatarkta*-A clinical trial”.
22. [www.ijpba.info](http://www.ijpba.info), Sharma Usha, Sharma K Krishna “Role of *Amrita Guggulu* in the management of *Vatarkta*-A clinical trial”.
23. Nayampalli SS, Ainapure SS, `A comparative study of diuretic effects of *Tinosporacordifolia* and hydrochlorothiazide in rats and a preliminary phase 1 study in human volunteers, *J Post grad Med*, 1988; 34: 233-236.
24. Singh SS, Pandey SC, Srivastava S,`Chemistry and Medicinal properties of *Tinosporacordifolia* (*Guduchi*). *Indian Journal of Pharmacology*, 2003; 35: 83-91.
25. Rai M, Gupta SS, `Experimental evaluation of *Tinosporacordifolia* (*Guduchi*) for dissolution of urinary calculi .*J Res Ind Med*, 1967; 2(1): 115.
26. Thapa DM, Dongra J, Nodulocystic acne oral *Guggululipid* versus tetracycline. *J Dermatol*, 1994; 21: 729.
27. Singh RB, Niaz MA, Ghosh S. `Hyperlipidemic and antioxidant effect of *Commiphoramukul* as an adjunct to dietary therapy in patients with hypercholesteremia. *Cardiovascular Drug Therapy*, 1994; 8(4): 659.
28. Bombardelli E, Spelta M.`*Commiphoramukul* extracts and therapeutic applications thereof. US patent application no. 882840, 1992.

29. Jachak SM, Saklani A. Challenges and opportunities in drug discovery from plants. *Curr. Sci.*, 2007; 92: 1251-1257.
30. Naik GH, et. Al. free radical scavenging reactions and phytochemical analysis of *Triphala*, an *Ayurvedic* formulation, *Current Science*, April 2005; 90(8).
31. <http://www.phytojournal.com>, Devjit Bhowmik et.al. Traditional Indian Herb *Punarnava* and its Medicinal Importance, *Journal of Pharmacognosy and Phytochemistry*.
32. Chowdhary A. *Boerhaviadiffusa*- Effect on Diuresis and some renal enzymes. *Ann. Biochem. Exp. Med.*, 1995; 15: 119-126.
33. [www.ayurpharm.com](http://www.ayurpharm.com), Sharma Usha, Sharma K Krishna "Role of *Punarnava Amrita Guggulu* in management of *Vatarkta*- A Clinical trial".
34. Lee HS, Won NH, Kim KH. Antioxidant effects of aqueous extract of *Terminalia Chebula* in vivo and in vitro. *Biol. Pharm. Bull*, 2005; 28(9): 1639-1644.
35. Rege NN, Thatte UM, Dahanukar SA. Adaptogenic properties of six *Rasayan* Herbs used in *Ayurvedic* medicines. *Phytotherapy Res*, 1999; 13: 275-291.
36. Jadona A, Bhadauriaa M, Shukla S. Protective effect of *Terminalia belerica* Roxb. And gallic acid against carbon tetrachloride induced damage in albino rats. *Journal of Ethnopharmacology*, 2007; 109(2): 214-218.
37. Bhattacharya A, Chatterjee A, Ghosal S, Bhattacharya SK. Antioxidant activity of active tannoid principles of *Embllica officinalis* (*Amla*), *Indian J. Exp. Biol.*, 1999; 37: 676-680.
38. Bhandari U, Ansari MN, The effect of aqueous extract of *Embllicaribes* Burm. On serum homocysteine, lipid and oxidative enzymes in methionine induced hyperhomocysteinemia *Indian J Pharmacol*, 2008; 40(4): 152-157.
39. Wadwkar RR, Agarwal SV, Tewari KM, Effect of *Baliospermum montanum* root extract on phagocytosis by human neutrophils *International Journal of Green Pharmacy*, 2008; 2: 46-49.
40. Oyedapo OO. Studies on the bioactivity of the extract of *plumbago zeylanica*. *Phytother Res*, 1996; 13: 346-348.
41. J. Vaneet Kumar, Tukaram S. Dudhamal, Ayu, "A comparative clinical study of *Shiravedha* and *Agnikarma* in management of *Gridhrasi* (sciatica)"
42. [www.ijrap.net](http://www.ijrap.net), Acharya K Aditya, Sharma Ahalya Evaluation of the efficacy of *Siravyadha* and *Guduchi Siddha Yoga Basti* in the management of *Vatarakta* with special reference to gout.

43. www.ijrap.net, Acharya K Aditya, Sharma Ahalya`Evaluation of the efficacy of *Siravyadha* and *Guduchi Siddha Yoga Basti* in the management of *Vatarakta* with special reference to gout.
44. Babu Mahesh t, A. Vijayalakshmi, International *Ayurvedic Medical Journal*, *Ayurvedic* management of *Vatarakta* w.s.r to gout– a case study.
45. *Bhaisajya Ratnavali "Vidyotini Hindi, Commentary"* editor Kaviraj Shri Ambika Dutta Shastri, cha.27/109-113 Chauk- hambhaSankritSansthan Varanasi, 18 Revised edi, 2005; *Kasarogadhikara* 13-15.
46. *Acharya Sharngadhara, Sharngadhara Samhita*, Deepika commentary of Adhamalla and Goodhartha Deepika of Kashirama, edited with footnotes by Pt. Parashuram Shastri, Varanasi: Krishnadas Academy; reprint 2000, *Madyama khanda* 7/70-89.
47. *Bhaisajya Ratnavali "Vidyotini Hindi, Commentary"* editor Kaviraj Shri Ambika Dutta Shastri, ChaukhambhaSankritSansthan Varanasi, 18 Revised edi, 2005; Cha.27/109-113,599.
48. www.researchgate.net ‘An *Ayurvedic* Polyherbal formulation *Kaishore Guggulu*’.
49. Tripathi Brahmanand, *Sarngadhara Samhita*, ChaukhambhaSanskritaSansthan, Varanasi, *Madhyama Khanda*, 7<sup>th</sup>/77, 205.
50. www.ijrap.net, research article, *Äyurvedic* Management of Cervical Spondylosis: A`case study.
51. www.ncbi.nlm.nih.gov, Ayu, ‘Antiinflammatory activity of *Guduchi Ghan* aqueous extract of *Tinospora Cordifolia miers*’.
52. <https://www.bimbina.com> ‘*GandharvaHaritakiChurna* benefits’.
53. <https://www.pitambari.com>.
54. <https://innovareacademics.in>, International journal of Pharmacy and Pharmaceutical sciences, ISSN- 0975-1491, Vol-7, 2015, Immunomodulatory effect of different proportions of the Herbal Mixture in *Triphala* on human T Lymphocytes.”