



Review Article

ROLE OF MEDICINAL HERBS IN THE MANAGEMENT OF *AMAVATA* (RHEUMATIC ARTHRITIS): AN AYURVEDIC APPROACH

Meenakshi Kumawat^{1*}, Jyoti Damor¹, Jaya Kachchwaha¹, Mayukh Sharma¹, Harish Vishnoi¹, Chandan Singh²

*¹PG Scholar, ²H.O.D. and Associate Professor, PG Department of Dravyaguna, Dr. Sarvapalli Radhakrishnan Rajasthan Ayurved University, Jodhpur, Rajasthan, India.

ABSTRACT

Rheumatoid Arthritis (known as *Amavata* in Ayurveda) is an autoimmune disease that causes chronic inflammation of the joints. Autoimmune diseases are illnesses that occur when the body's tissues are mistakenly attacked by their own immune system. Patients with autoimmune diseases have antibodies in their blood that target their own body tissues, where they can be associated with inflammation. Because it can affect multiple other organs of the body, Rheumatoid Arthritis is referred to as a systemic illness and is sometimes called rheumatoid disease. According to the Ayurvedic system of medicine the formation of endotoxins called 'Aam'. 'Aam' is basically undigested and unassimilated food of our body. 'Aam' also results from leading an unhealthy life style, ingestion of state food, defrosting and reheating eatables, mental tension and stress. The herbs have the potential to treat symptoms of RA like inflammation and pain other than that, it also treats arthritis at immune and free radical level. These herbs are known for their immunosuppressive action, anti-inflammatory action, analgesic action and antioxidant action. It was concluded that RA can be cured completely or managed well with Ayurveda medicines and *Panchakarma* without any side effects.

KEYWORDS: Rheumatoid Arthritis, *Amavata*, autoimmune diseases, inflammation, immune system, Herbal medicine, *Panchakarma*.

INTRODUCTION

RA is an autoimmune chronic inflammatory disorder. The characteristic feature of RA is persistent inflammatory which possess cavities, known as synovial joints, usually involving peripheral joints in a symmetric distribution, where synovium becomes inflamed causing warmth, redness, swelling and pain⁽²⁾. As the disease progresses, the inflamed synovium invades and damages the cartilage and bone of the joint. The potential of the synovial inflammation to cause cartilage destruction is the hallmark of the disease. RA affects between 0.5 and 1% of adults in the developed world with between 5 and 50 per 100,000 people newly developing the condition each year⁽³⁾. In autoimmune diseases normally, the immune system displays self-tolerance and does not attack the body's own components. This self-tolerance breaks down and leads to an autoimmune disorder. The immune system fails to recognize self-antigens and mounts a misguided attack against them. In Ayurveda, *Vat arakta* is a disease caused by vitiated *Vata* and *Rakta*, where aggravated *Vayu* gets obstructed in its course by the vitiated blood and *Vayu* vitiates the entire blood⁽⁴⁾.

This vitiated *Rakta* in long term involves *Mamsadi dhatu*. This can be taken as a tool to understand autoimmunity in Ayurveda. According to Ayurveda, Rheumatoid arthritis can be compared as "*Ama vata*". It has been described as.

*Sa Kashtaha Sarvarogaanaam yadaa prakupito Bhavet |
Hastha paada shiro gulpha trika jaanu uru sandhishu ||
Karoti sarujam shopham yatra doshaha prapadyate |
Sa desho rujate atyatham vyavidha iva vrishchkaihi||*

(*Ma.Ni.25/7-8*)

This means "If the disease "*Amavata*" (rheumatoid arthritis) gets aggravated, it becomes most difficult disease comparatively to others. The joints of hands, feet, ankles and elbow, low back, knee, and hip become inflamed and painful. The pain in the affected joints resembles the pain of a scorpion's sting."⁽⁵⁾

A detailed description of the causative factors, pathophysiology, symptoms, treatment principles and diet & lifestyle modifications for treating '*Amavata*' have been clearly explained in Ayurveda, thousands of years back⁽³¹⁾.

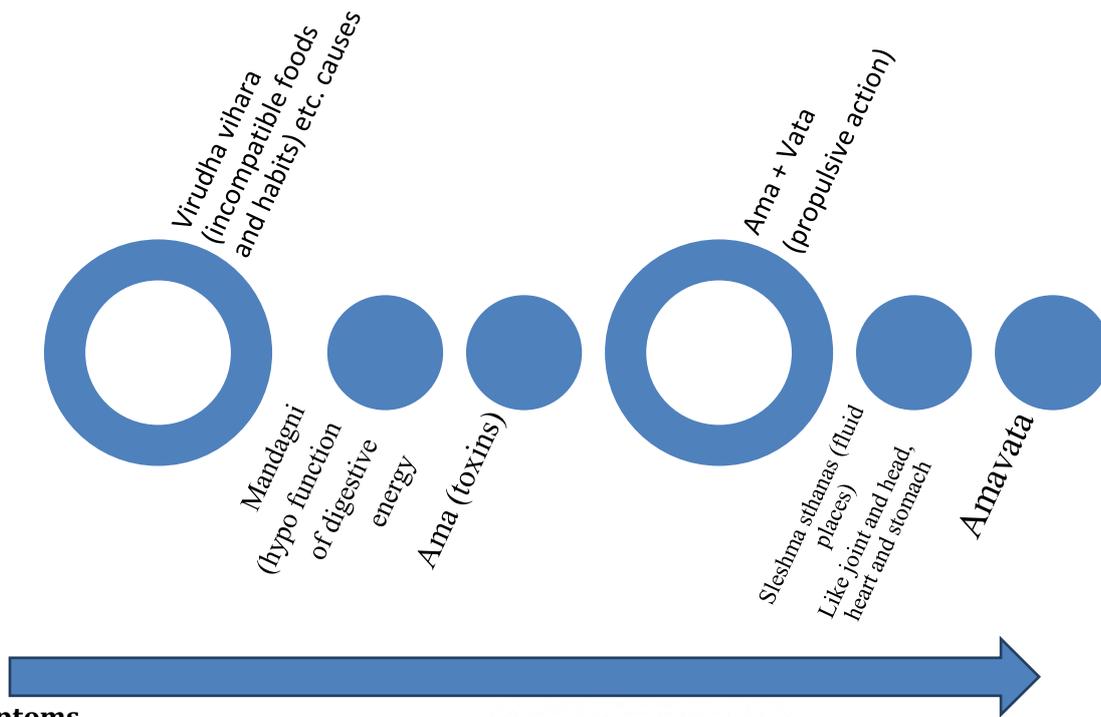
Aetiopathogenesis of rheumatic arthritis

The symptoms of *Amavata* mentioned in Ayurveda are found slightly identical and very much similar symptomatically to Rheumatoid arthritis. Its detail description of aetiopathogenesis, signs & symptoms, and prognosis of disease are very well explained in Ayurvedic classics. However, disease *Amavata* is described the first time as a separate entity by Acharya Madhavakara⁽⁶⁾. Ayurveda described the pathogenesis of *Amavata* by production of *Ama* (*Apakwa Annarasa* or undigested food) due to *Mandagni* (weak digestive power), which vitiated *Vata Dosha*. Thus, *Vata dosha* takes the **Pathogenesis of RA** ⁽²⁷⁾

Ama into systemic circulation and into the body tissue, where *Ama* and accumulated in the joints and vitiated the *Shleshaka Kapha* (synovial membrane of joint) and produces the symptoms like *Sandhisotha* (Swelling of joints), *Sandhi Shula* (joint Pain), *Stabdhata* (stiffness of joint). This condition leads to freeting type of pain with inflammation in multiple joints (i.e., at *Kapha* site). Another prodromal symptoms *Agnidaurbalya* (loss of appetite), *Nidra Viprayay* (disturbed sleep), *Gauravam* (heaviness), *Jwara* (fever), *Angamarda* (body aches), *Karmahani* (loss of physical activity), *Jadta* (stiffness) ⁽⁷⁾.



Pathogenesis of Amvata ⁽²⁷⁾



Symptoms

Rheumatoid arthritis usually inflames multiple joints in a symmetrical pattern (both sides of the body affected). Early symptoms may be subtle, usually with only minor joint pain, stiffness, and fatigue. Wrists, fingers, knees, feet, and ankles are the most commonly affected. ⁽⁷⁾

Joint symptoms may include

- Morning stiffness, which lasts more than 1 hour, is common. Joints may feel warm, tender, and stiff when not used for an hour.
- Joint pain is often felt on the same joint on both sides of the body.
- Over time, joints may lose their range of motion and may become deformed.

Other symptoms include

- Chest pain when taking a breath (pleurisy)
- Dry eyes and mouth (Sjogren syndrome)
- Eye burning, itching, and discharge
- Nodules under the skin (usually a sign of more severe disease)
- Numbness, tingling, or burning in the hands and feet
- Sleep difficulties

Cardinal symptoms of Amavata

- *Vrisik damsha vata vedana* (Morning pain severe in nature)
- *Sanchari Vedana* (shifting pain)
- *Stambha* (stiffness of joints)
- *Jwara* (Increase temperature)

- *Karmahani* (loss of movements)
- *Sandhi Vikruti* (joint deformity)
- *Kshudhamandya* (Loss of appetite)

Ayurvedic Management of Amavata

In Ayurveda following are the lines of treatment in *Amavata* (Rheumatoid arthritis) ⁽⁶⁾:

- *Langhanam* (Fasting)
- *Sodhana chikitsa* (Purification of the body)
- *Shamana chikitsa* (Treatment for subsiding the symptoms)

Langhana (fasting) - It is done by means of complete absence of food, or by giving green gram / rice / barley soups.

Shodhana - It is done through *Panchakarma* therapy (The procedure includes application of medicated oil which is selected according to type of pain followed by sudation therapy (steam, dry heat, *Patra pottali*, *Pinda sweda*, etc.) Usually done in cases of sprain, back ache, muscular injury). Usually treatment is long term and various procedures are done according to the patient condition and presentation. Therapies like *Snehapanam*, *Vamanam*, *Manal kizhi*, *Virechanam*, *Podikizhi*, *Elakkizhi*, *Pizhichil*, *Vaitharana / Kshara basti*, *Navarakizhi* etc are done to get the maximum results.

Shaman Chikitsa - It is done by using very effective and time-tested Ayurveda formulations like *Kashaya*, *Asavarista*, *Choorna*, *Vati*, *Taila*, *Rasoushadi* etc.

Apart from these three, strict diet regimen and life style changes are advocated.

Medicinal Herbs for the management of Amavata

1. Rasna (*Pluchea lanceolata*): Rasna has been traditionally used since ancient times by Ayurvedic practitioners, to treat various painful afflictions and swelling of the body joints. Tribally, a poultice of leaves is applied to the inflamed areas of the body⁽⁸⁾.

Mechanism of action

A. Anti-inflammatory activity: The ethanolic extract of *Pluchea lanceolata* exhibited significant anti-inflammatory activity. An important clinical difference was that the plant extract suppressed the delayed periarticular changes more as compared to the acute inflammatory phase. Ayurvedic compositions containing *Pluchea lanceolata* extract was tested on experimental arthritis and granuloma pouch. They showed marked anti-inflammatory activity in both models. In experimental arthritis, a decoction of the plant has been reported to prevent the swelling of joints⁽⁹⁾.

B. Immunosuppressive actions: The immunosuppressive potential of 50% ethanolic extract of *Pluchea lanceolata* and its bioactive chloroform fraction (PLC) was investigated with basic models of immunomodulation, such as, the humoral antibody response, cell-mediated immune response, skin allograft rejection test, in vitro and in vivo phagocytosis.⁽¹⁰⁾

C. Anti-oxidant activity: Flavonoids are reported as scavengers of free radicals and potent inhibitors of lipid peroxidation. Oral pre-treatment of the ethanolic extract significantly attenuated cadmium chloride, induced oxidative stress, and genotoxicity⁽¹¹⁾.

D. Anti-arthritis activity: In albino rats, the water-soluble fraction of the 90% alcohol extract showed significant anti-inflammatory activity in induced formalin arthritis and granuloma pouch. The decoction of the plant has been used in arthritis. The leaves are aperients and used as a laxative, analgesic and antipyretic⁽¹²⁾.

2. Gokhsura (*Tribulus terrestris*)

This spiky fruit looks like the cloven hoof of a cow and hence the name of a *Gokhsura* (cow-hoof). 'Kshura' means "scratcher". It is a superb diuretic that clears excess fluids from the system. Its hormonal precursor compounds actively nourish the reproductive system. It is also very useful for itchy skin, especially on the hands and feet. The fruit aerial parts and root are used in Ayurveda. The aerial parts appear to have the widest spectrum of rejuvenative activity for the reproductive system. The fruits are best known for their lithotropic activity and for their action on the skin⁽¹³⁾.

Mechanism of action

A. Anti-arthritis activity: Methanolic extract of *Tribulus terrestris* fruit was reviewed for anti-arthritis activity it has an important mechanism of anti-arthritis activity, which is the membrane stability modulating effect. The activity is probable due to presence of flavonoids. These flavonoids are having the surface charge neutralizing effects. It was found that the administration of *Tribulus terrestris* leads to inhibition of leukocyte migration which may have beneficial effect for joint preservation. The activity may be due to presence of steroidal glycoside^(14,15).

B. Analgesic activity: The significant analgesic effects of different doses of *Tribulus terrestris* extract in formalin test. In the formalin test, the initial phase is a direct stimulation of nociceptors and the late phase is thought to be secondary to inflammatory reaction and therefore it seems that the analgesic effect of *Tribulus terrestris* extract may be mediated centrally and peripherally⁽¹⁶⁾.

3. Guduchi (*Tinospora cardifolia*)

Guduchi is described as "the one who protects the body" One of the synonym is "Amrta" which means "divine nectar". This is a virile creeper that grows throughout the forest of India. Those growing up *Neem* (*Azadirachta indica*) trees are said to be the best as the synergy between these two bitter plants enhances efficacy. Its therapeutic strength lies in its rejuvenating and strengthening properties while also detoxifying and cleansing the whole system, specifically via the liver. It is also known as *Cakralakshana* meaning "marked with a circle as the transverse section of the vine system reveals a cartwheel pattern"⁽¹³⁾.

Mechanism of action

A. Immunomodulatory activity: *Guduchi* leads to stimulation of T and B lymphocytes and also exhibits TH-1 immune response which results in enhanced macrophage phagocytosis and increase production of nitric acid. Extract of *Guduchi* was responsible for activation of macrophages, leading to increase in leukocytes and enhanced neutrophil functions. The spontaneous mytogenic activity on splenocytes which potentiated non-specifically the responsiveness of splenocytes to mytogen, is responsible for immunomodulatory activity of *Guduchi*⁽¹⁷⁾.

B. Anti-inflammatory activity: The aqueous extract has significant anti-inflammatory activity. It significantly reduces the pain and morning stiffness in patients having rheumatoid arthritis. RA is considered as an immune disorder and

Guduchi have active principles which have anti-inflammatory and antiarthritic activity. This effect is also considered to be due to the inhibition of C3 convertase and serine protease which indicates that inhibition of serine protease in general may be involved in anti-inflammatory activity. When C3 convertase is inhibited, pro inflammatory anaphylactic peptides are not released with the result that no inflammation is observed⁽¹⁸⁾.

C. Antioxidant activity: The extract of *Tinospora cardifolia* reported for reducing the toxicity which was caused by free radicals. It also inhibits the lipid peroxidation and generation of superoxide and hydroxyl radicals in vitro. The extracts also reduced the elevated lipid peroxides in serum and liver and alkaline phosphatase glutamine pyruvate transaminase⁽¹⁹⁾.

4. *Punarnava (Boerhavia diffusa)*:

Punarnava literally means in Ayurveda one which “renews the old body”. Its rejuvenative action works via its opening and cleansing activity, allowing effective nourishment to reach the tissues. It is a superb diuretic and it benefits the heart. It is the main ingredient in *Punarnavadi guggulu* an Ayurvedic formula for reducing water retention, congestive heart conditions and treating oedematous inflammatory joint diseases.

Mechanism of action

A. Anti-arthritic activity: The aqueous extract significantly inhibited the increased serum amino transferase activity in arthritic animals similar to hydrocortisone. Liver ATP phosphohydrolase activity was also increased by the aqueous extract⁽²⁰⁾.

B. Anti-inflammatory activity: The aqueous and acetone extracts of the root, showed significant anti-inflammatory activity.⁽²¹⁾

C. Antioxidant: Ethanol and methanol extracts were prepared and screened for in-vitro antioxidant activities using Ferric reducing power and Hydrogen peroxide scavenging activity. The activity was compared to standard antioxidant like ascorbic acid. Both the extracts showed strong antioxidant activity in both the methods. Between these two extracts, ethanolic extract has shown better antioxidant activity as compared to methanolic extract in both the activities⁽²²⁾.

5. Eranda (*Ricinus communis*): Castor oil is considered as the king of the medicines for treating arthritis. A native of Africa, it grows all over the India. Of the two varieties, red and white, the white is used

medicinally. The leaf and the root are also highly prized medicines for arthritis⁽²³⁾.

Mechanism of action

A. Antioxidant effect: Extract produced an inhibition of Aryl Hydrocarbon hydro-oxylase (AHH) activity and H₂O₂ production by lindane-induced mouse Hepatic microsomes, indicating the antioxidant activity of the plant⁽²⁴⁾.

B. Anti-inflammatory activity: Petroleum ether extract of the root bark shows anti-inflammatory activity as it inhibits the secondary phase of inflammation and it is known that only specific anti-inflammatory agent act on secondary phase, it is considered as specific anti-inflammatory agent^(25,26,33).

CONCLUSION

Ayurveda is gaining an overwhelming response all over the world, especially in treating chronic or lifestyle disorders. Improper life style, irregular food habits, stress and workaholic attitude is now gripping the younger generation by altering the physio biological phenomenon of their body thus hampering their standards of life style causing an imbalance at cellulomolecular level and inculcating one of the chronic disease arthritis. With above discussion it can conclude that RA can be cured completely or manage well with Ayurveda medicines and Panchakarma. There are many researches done on this topic which are the evidence to support this fact. There are no chances of recurrence if person follow the Ayurvedic concept of healthy life style and regular cleansing of body through Panchakarma. Ancient Ayurvedic practitioners designed an Ayurvedic formulation with synergism of these medicinal herbs, to treat all the factors related to arthritis and till date this formulation holds its quality's efficacy and proves its effectiveness at par to the contemporary parameters.

REFERENCES

1. Stephen J, Mxine A. Current Medical Diagnosis and Treatment, 47th ed. New York: Mc Graw Hill Publishers; 2008, p. 721.
2. Vaibhau A, Singh OP. Amavata (Rheumatoid Arthritis) in Contemporary Modern Medical Science. Indian Journal of Applied Research 2016;6(6);42-44.
3. Harrison's principles of internal medicine (2008), Rheumatoid arthritis: Fauci, Braunwald, Kasper, Hauser (eds.) Longo Mc Graw-Hill Companies (17th edn).
4. Mahato R.R., Dave A.L., Shukla V.D. A comparative study of Rasona Rasnadi Ghanavati and Simhanada Guggulu on Amavata with special

- reference to rheumatoid arthritis. *Ayu.* 2011; 32 (1): 46–54.
5. Srikanta Murthy KR. Delhi, India: Chaukhamba Orientalia; 1993. Madhava Nidanam (roga viniscaya) of Madhavakara (English translation), Chapter 28.
 6. Arundatta, Commentator Ashtanga Hridayam, Nidana Sthana, Vatashonita Adhyaya (2006) 16/1-3, Pt.Harishastri Paradkar (ed), Chaukhamba Krishnadas Academy, Varanasi, p: 536.
 7. Vagbhata, Ashtanga Hridayam, NidanaSthana, Vatashonita Adhyaya (2012) 16/1-4, In: Kaviraja Atrideva Gupta (ed), Chaukhamba Prakashana, Varanasi, p: 381
 8. Agnivesha, Charaka, Dridhabala, Charaka Samhita, Chikitsasthana (2011) 29/156-162 Vd. Yadavji Trikamji Acharya (ed) Varanasi: Chaukhambha Surbharti Prakashana, p: 731.
 9. Srivastava V, Varma N, Tandon JS, Srimal RC. Anti-inflammatory activity of *Pluchea lanceolata*: isolation of an active principle. *International Journal of Crude Drug Research.* 1990; 28(2): 135-7.
 10. P. K. Goyal et.al. A Review on Phytochemical and Biological Investigation of Plant Genus *Pluchea*. *Indo American Journal of Pharm Research.* 2013; 3(4): 3000-7
 11. Sharma SK, Goyal N. In Vitro Antioxidant Activity of Root Extracts of *Pluchea lanceolata*. *Journal of Pharmaceutical and Biomedical Sciences.* 2011;10(10):141-45
 12. Feroz H, Khare AK, Srivastava MC. Experimental evaluation of anti-arthritis
 13. Pole S. *Ayurvedic medicine: The Principles of Traditional Practice.* 1st ed.London: Churchill Livingstone Publishers;2006.p.185-189.
 14. Philips OA, Mathew K, Oriowo MA. Anti-hypertensive and vasodilator effects of methanolic and aqueous extracts of *Tribulus terrestris* in rats. *J Ethnopharmacol,* 006; 104(3):51–5.
 15. Mishra NK, Biswal GS, Chowdary KA, Mishra G. Anti-arthritis activity of *Tribulus terrestris* studied in Freund's Adjuvant induced arthritis rats. *Journal of Pharmaceutical Education and Research.* 2013; 4(1):41-44.
 16. Heidari MR, et.al. The analgesic effect of *Tribulus terrestris* extract and comparison of gastric ulcerogenicity of the extract with indomethacine in animal experiments. *Annals of the New York Academy of Sciences.* 2007; 1095(1):418-27.
 17. Upadhyaya R, Pandey RP, Sharma V, Verma Anita K. Assessment of the multifaceted immunomodulatory potential of the aqueous extract of *Tinospora cordifolia*. *Research Journal of Chemical Sciences.* 2011; 1(6):71-9.
 18. Patgiri B, Umretia BL, Vaishnav PU, Prajapati PK, Shukla VJ, Ravishankar B. Anti-inflammatory activity of Guduchi Ghana (aqueous extract of *Tinospora Cordifolia* Miers.). *Ayu.* 2014 Jan; 35(1):108.
 19. Vd.Mukund Sabnis. *Chemistry and Pharmacology of Ayurvedic Medicinal Plants.* 1st ed. Varanasi: Chaukhamba Amara Bharati Prakshan, 2002, p. 340
 20. Anonymus, *Indian Medicinal Plant.* Vol.4, Medicinal Plants unit: Indian Council of Medical research, New Delhi, 2008. P. 617-30
 21. Oladele GM, Ode OJ, Ogunbodede MA. Evaluation of anti-inflammatory and membrane stabilizing effects of aqueous root extract of *Boerhavia diffusa* Linn in rats. *International Journal of Applied Biology and Pharmaceutical Technology.* 2011; 2(3):84-8
 22. Rajpoot K, Mishra RN. *Boerhavia diffusa* Roots (Punarnava mool)–Review as Rasayan (rejuvenator/antiaging). *International Journal of Pharmaceutical and Biomedical Research.* 2011 Oct;2(4):1451-60.
 23. Pole S. *Ayurvedic medicine: The Principles of Traditional Practice.* 1st ed. London: Churchill Livingstone Publishers;2006. P. 153
 24. Elizabeth M Williamson. *Major herbs of ayurveda.* 1st ed. London: Churchill Livingstone Publishers; 2002.p.452
 25. Kr BK, Parimi S, Ayaz A. Antinflammatory activity of eranda paka against carrageenan induced paw oedema in albino rats. *Int. Ayurvedic Med. J.* 2014;2(3):337-341
 26. Vd.Mukund Sabnis. *Chemistry and Pharmacology of Ayurvedic Medicinal Plants.* 1st ed. Varanasi: Chaukhamba Amara Bharati Prakshan.2006. p. 451
 27. Iain B. Schett MG. Mechanisms of Disease: The Pathogenesis of Rheumatoid Arthritis. *N Engl J Med* 2011;365(23):2205-19.
 28. Venkatraman M, Assefi N. *Ayurveda: General Principles and Treatment of Rheumatoid Arthritis.* *Alt Med Alert.* 2002; 5:144–7.
 29. Varier KS. *Ayurvedic Treatment of Rheumatoid Arthritis.* *Swasth Hind.* 1980; 5:334–6.
 30. Banerji D. The place of indigenous and western systems of medicine in the health services of India. *Soc Sci Med.* 1981;15A:109–14.

31. Upadhyay A, Vaidya M. An Ayurvedic approach to rheumatoid arthritis. J Pharm Sci Innov. 2014;3(5417-420)
32. Mohamed AM, Ali T. Rheumatoid arthritis Ayurvedic classical formulations Database Journal of Ethnopharmacology. 2016 16; 30(4): 464-8
33. Kumar BK, Parimi S, Ayaz A. Antinflammatory activity of eranda paka against carrageenan induced paw oedema in albino rats. Int. Ayurvedic Med. J.2014;2(3):337-341
34. Meenakshi Kumawat, Jyoti Damor, Jaya Kachchhwaha, Ayush Kumar Garg, Chandan Singh. Pharmacological Properties and Therapeutic Potential of Syzygium Cumini (Jamun): A Review. World Journal of Pharmaceutical Research.2018;7(3):312-322.

Cite this article as:

Meenakshi Kumawat, Jyoti Damor, Jaya Kachchhwaha, Mayukh Sharma, Harish Vishnoi, Chandan Singh. Role of Medicinal Herbs in the Management of Amavata (Rheumatic Arthritis): An Ayurvedic Approach. International Journal of Ayurveda and Pharma Research. 2018;6(1):62-68.

Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**

Dr Meenakshi Kumawat

PG Scholar,

PG Department of Dravyaguna, Dr.

Sarvapalli Radhakrishnan Rajasthan

Ayurved University, Jodhpur,

Rajasthan, India.

Email: meenukumawat28@gmail.com

Disclaimer: IJAPR is solely owned by Mahadev Publications - A non-profit publications, dedicated to publish quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJAPR cannot accept any responsibility or liability for the articles content which are published. The views expressed in articles by our contributing authors are not necessarily those of IJAPR editor or editorial board members.

