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Review Article

RESEARCH INSIGHTS ON AJAMODADI CHURNA: A COMPREHENSIVE REVIEW

Manaswini KR ^{1*}, Pooja B ², Gazala Hussain ³, Anusha KR ¹, Gayathri Sajeev ¹

¹ PG Scholar, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

² Assistant Professor, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

³ Associate Professor, Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, Karnataka, India

*Corresponding Author Email: manuravi46@gmail.com

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ABSTRACT

Churna Kalpana is an important solid dosage form in Ayurvedic pharmaceuticals. In this preparation, clean, dry drugs are powdered finely and sieved through cloth or sieve. Ajamodadi churna, a classical Ayurvedic formulation, is widely used by Ayurvedic practitioners. Significant number of research has been carried out on Ajamodadi churna. A thorough literary search through various portals like Research gate, DHARA, PubMed and other journals to gather research conducted on Ajamodadi churna revealed twenty-eight research articles and two review articles. Among twenty eight research articles, eight were pharmaceutical and analytical studies, six were pre-clinical and fourteen were clinical studies. Pharmaceutical studies have provided information on the purity, safety and quality of in-house and market-available Ajamodadi churna formulations. Pre-clinical studies have put light on safety and pharmacological activities. Clinical studies have demonstrated that Ajamodadi churna is beneficial in the said conditions either alone or in combination with other treatment depending on the pathology. Based on these researches conducted, it is established that Ajamodadi churna is useful in different conditions like Shvayathu, Amavata, Sandhi peeda, Gridhrasi.

Keywords: Ajamodadi churna, review, pharmaceutical studies, preclinical studies, clinical studies.

INTRODUCTION

Churna Kalpana is an important solid dosage form in Ayurvedic pharmaceuticals. In this preparation, clean and dry herbs are finely powdered and then sieved through a cloth or sieve. Ajamodadi churna, a classical Ayurvedic formulation, is widely used by Ayurvedic practitioners. There are about six different formulations named Ajamodadi churna, described in various classical texts of Ayurveda.¹ Among these, one is indicated in Swarabedha (Hoarse voice), one in Atisara (Diarrhoea), two formulations are indicated in Shula (Abdominal colic), one is said to be useful in Vayu chikitsa (Treatment of vitiated Vata) and one is indicated in Kaphaja and Vataja roga (Diseases due to vitiated Kapha and Vata).

Ajamodadi churna, as found in 'The Ayurvedic Formulary of India (AFI)', is taken from Sharangadhara Samhita, Madhyama Khanda.² It consists of Ajamoda, Vidanga, Saindhava lavana, Devadaru, Chitraka, Pippalimula, Shatapushpa, Pippali, Maricha, Pathya, Vriddhadaru and Nagara. It is indicated in the management of various conditions such as Shvayathu (oedema), Amavata ruja (pain caused by polyarthritis due to Ama), Sandhi peedanam (joint pain), Gridhrasi (Sciatica), ruja in kati, prishta, guda and jangha (pain at hip, back, anus and lower legs), Tuni (Bladder pain radiating towards anus and penis), Pratuni (Proctalgia) and Vishvachi (Brachial neuralgia)³. This formulation is explained as Ajamodadi vataka in classical books like Chakradatta, Vangasena, Brihat Nighantu Ratnakara.

Research provides valuable insights into various aspects of a formulation, offering a platform for evidence-based medicine, which is crucial for the acceptance of a treatment. Numerous studies have been conducted on Ajamodadi churna. Therefore, this work aimed to compile the existing research on Ajamodadi churna through an extensive literary search using databases such as ResearchGate, DHARA, PubMed, and other relevant journals. In total, twenty-eight research articles and two review articles on Ajamodadi churna were identified during the search. The research articles identified were categorized into three sections: pharmaceutical and analytical studies, preclinical studies, and clinical studies, with a summary of key findings provided for each.

PHARMACEUTICAL AND ANALYTICAL STUDIES

Standardization of Ajamodadi churna: In this study, in-house (as per AFI) formulation and a market sample of Ajamodadi churna have been standardized by comparing extractive values, ash values, physico-chemical and organoleptic characters. pH values were slightly acidic for both the samples. Physical characteristics like bulk density, tap density etc., showed slight variation between in-house and market samples. Sodium content was found in both the samples however, it was higher in market sample. Fluorescent analysis has been reported. Extractive and ash values of individual ingredients are also given.⁴

Development of fingerprints for Ajamodadi churna by UV-Spectrophotometry: In this study, a new spectrophotometric method in UV region was developed, performed at 342.5nm using Piperine as standard. Comparison was done between market formulations as AJC-A, AJC-B and AJC-C and lab formulations as AJC-I, AJC-II, AJC-III. The results of all batches were found in close proximity with each other.⁵

TLC and HPLC fingerprint development of *Trachyspermum ammi* Linn and Ajamodadi churna: In this study, TLC and HPLC analyses of *Trachyspermum ammi* were compared with four market samples of Ajamodadi churna. The TLC of *Trachyspermum ammi* methanolic extracts showed Rf values of 0.77, 0.68, and 0.64. The Rf values of Ajamodadi churna samples from Krishna Pharmaceuticals, Navjeevan Pharmaceuticals, and Sadhana Chemicals matched those of *Trachyspermum ammi*, while the sample from Jamuna Pharmaceuticals did not match, indicating the absence of *Trachyspermum ammi* in the Jamuna sample.

In the chromatogram of methanolic extracts, *Trachyspermum ammi* showed a principal peak at Rt 4.153 minutes with an area of 20.83%, along with other peaks at 4.7 minutes (area 26.50%) and 18.3 minutes (area 50.47%). Ajamodadi churna from Navjeevan Pharmaceuticals and Sadhana Chemicals displayed Rt values consistent with those of *Trachyspermum ammi*. However, the samples from Jamuna and Krishna Pharmaceuticals showed the absence of *Trachyspermum ammi*.⁶

GC fingerprint development of *Trachyspermum ammi* and Ajamodadi churna: In this study, various chemical tests were conducted on the methanolic extracts of *Trachyspermum ammi* and market samples of Ajamodadi churna. The tests revealed the presence of phenols, phytosterols, alkaloids, glycosides, and flavonoids. The peak between Rt 1.22 and 1.4 minutes was considered the most significant, contributing approximately 97.4% of the total area. Ajamodadi churna samples from Jamuna Pharmaceuticals, Krishna Pharmaceuticals, and Sadhana Chemicals exhibited a principal peak similar to that of *Trachyspermum ammi*. However, the Ajamodadi churna from Navjeevan Pharmaceuticals showed the lowest percentage area (43.66%) at Rt 1.3 minutes, indicating the lowest concentration of *Trachyspermum ammi* in the sample.⁷

Study on elemental analysis, pesticides, antioxidant, marker compound and validation of conversion of Ajamodadi churna into granules: In this research, in-house (Sample-A) and market (Sample-B) samples of Ajamodadi churna were analyzed for piperine, eucalyptol, caryophyllene, and eugenol using standard references. Sample-B contained higher levels of piperine, while sample-A had higher levels of eugenol and eucalyptol. Caryophyllene was absent in sample-A. The Rf value results confirmed the presence of phytoconstituents in both samples. Neither sample showed traces of pesticides (Dichlorvos or Quinalphos). The elemental composition of both samples was within permissible limits. Antioxidant activity was compared to that of ascorbic acid and sample-A demonstrated better antioxidant activity than sample-B. A wet granulation method was used to prepare the Ajamodadi churna granules, which exhibited better flow properties than the powdered form.⁸

Development and validation of HPTLC method for simultaneous estimation of Piperine and Scopoletin in Ajamodadi churna: In this study, chromatographic conditions such as the mobile phase, stationary phase, detection wavelength, and solubility were optimized for the development of HPTLC method. The analytical method was developed and optimized for the analysis. The sample was purchased from the market, and the

standards scopoletin and piperine showed Rf values of 0.75 and 0.86, respectively. The sample contained 130 µg/band of scopoletin and 550 µg/band of piperine.⁹

Pharmaceutico-analytical standardization of Ajamodadi churna and its drug modification as Ajamodadi chewable tablet: In this research, Ajamoda, Amalaki, Chitrak mula, Haridra, and Yava Kshara were taken in appropriate quantities to prepare the churna, which was sieved through mesh No. 85. Ajamodadi churna chewable tablets (ACT) were prepared using the wet granulation method with a non-aqueous solution in three batches and analyzed separately. ACT 1 and ACT 3 were buff-colored with an aromatic odor, while ACT 2 had a light yellowish color and a characteristic odor. The pH of ACT 1, 2 and 3 were 6. The moisture content of ACT 1, 2 and 3 were 1.04%, 1.27%, and 1.04%, respectively. The average hardness of ACT 1 and ACT 3 was 2 kg/cm², and the friability of ACT 1 and ACT 3 was 0.46%. Both ACT 1 and ACT 3 disintegrated completely within 1 minute. The physico-chemical parameters indicated good quality and enhanced shelf life.¹⁰

Pharmacognostical and pharmaceutical evaluation of Ajamodadi vataka: In this research, the ingredients of Ajamodadi Vataka were processed into churna and mixed with an equal quantity of Guda. The mixture was then granulated using a granulation machine, and 500 mg tablets were formed. Pharmacognostical and pharmaceutical assessments of Ajamodadi Vataka were conducted. Under the microscope, various characteristics were observed, including black debris, starch grains, stone cells, oil globules, annular vessels, cluster crystals, prismatic crystals, fibers, tannin content, lignified stone cells, and pitted vessels. In the physicochemical analysis, the uniformity of tablets, hardness, loss on drying (LOD), ash value, and water and alcohol-soluble extracts were measured. The HPTLC profile of methanolic extract of the drug showed four spots at 366 nm and ten spots at 254 nm. The physicochemical analysis indicated that the formulation met the maximum qualitative standards.¹¹

PRECLINICAL STUDIES

In-vitro free radical scavenging activity: The antioxidant activity of Ajamodadi churna methanolic and aqueous extracts was evaluated in this study. Both extracts exhibited good, dose-dependent free radical scavenging activity across all models. The IC50 values for the methanolic and aqueous extracts were 98 µg/ml and 100 µg/ml for DPPH, 145 µg/ml and 310 µg/ml for ABTS, and 600 µg/ml and 620 µg/ml for nitric oxide scavenging, respectively. The total phenolic content was found to be 296 µg/ml for the methanolic extract and 188 µg/ml for the aqueous extract, with reference to the standard Gallic acid.¹²

Antibacterial activity against enteric pathogens: In this study, aqueous, ethanolic, methanolic, and acetone extracts of various Ayurvedic formulations were tested for antibacterial activity, including Ajamodadi churna. The methanolic and acetone extracts of Ajamodadi churna demonstrated strong antibacterial activity against *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Salmonella typhi*, *Bacillus subtilis*, *Escherichia coli*, and *Proteus vulgaris*, while the aqueous extract exhibited weaker activity.¹³

Anti-inflammatory activity: In this study, the acute toxicity and anti-inflammatory activity of the aqueous extract of Ajamodadi churna (AJM) were evaluated in rats. Graded doses of AJM (1200–4000 mg/kg) did not show any signs of acute toxicity. The extract demonstrated a reduction in paw edema volume. In the Carrageenan-induced air pouch model, AJM decreased the total

leukocyte count, granulocyte count, and myeloperoxidase activity compared to the control group. It also inhibited cellular infiltration into the air pouch fluid.¹⁴

Anti-inflammatory and anti-arthritic activity: In this study, the anti-inflammatory and anti-arthritic activities of the aqueous extract of Ajamodadi churna (AJM) were evaluated in rats. The study assessed the effect of AJM on acute inflammation using the Carrageenan-induced hind paw edema model, local inflammation through the air pouch model, chronic inflammation and anti-arthritic activity using the Complete Freund's Adjuvant (CFA) model, as well as radiographic and hematological parameters. The extracts showed a significant reduction in paw edema volume. In the Carrageenan-induced air pouch model, the exposed tissue exhibited a decreased inflammatory response and a reduction in total leukocyte count. In the CFA model, AJM (200 mg/kg/day) effectively inhibited the increase in paw volume, with results comparable to the standard treatment. Radiographic observations indicated that AJM reduced arthritis-associated joint changes. Additionally, AJM treatment restored normal white blood cell (WBC) counts and corrected other hematological alterations. The study concluded that AJM exhibited significant anti-inflammatory and anti-arthritic effects at both doses, with the higher dose proving to be more effective.¹⁵

Anti-arthritic activity and inflammatory mediators modulation effect: In this study, test samples of Ajamodadi churna, AC-1 (200 mg/kg) and AC-2 (400 mg/kg) were administered to arthritis-induced animals for 21 consecutive days. A significant reduction in paw edema was observed in the rats treated with AC-2. The arthritis score in the treated rats was notably lower compared to the diseased control group. Serum levels of IL-6 and TNF- α were reduced, and blood profiles (including RBC, WBC, Hb counts, and ESR) were restored following administration of the test drugs. Histopathological analysis showed that AC helped ameliorate joint changes associated with rheumatoid arthritis (RA) by reducing pro-inflammatory mediators. The study concluded that AC possesses significant anti-arthritic activity.¹⁶

Antioxidant activity: In this study, antioxidant activity of five formulations, including Ajamodadi churna, was evaluated and compared to gallic acid using superoxide radical scavenging activity and in-vitro reducing power method. The reducing power of Ajamodadi churna ranged from 0.069 \pm 0.002 at 50 μ g/ml to 0.118 \pm 0.003 at 1000 μ g/ml. The superoxide radical scavenging activity of Ajamodadi churna ranged from 78.4 \pm 0.004 at 50 μ g/ml to 87.3 \pm 0.013 at 1000 μ g/ml, which was close to the standard. The IC50 value of Ajamodadi churna was found to be 105.13 μ g/ml.¹⁷

CLINICAL STUDIES

Clinical evaluation of Ajamodadi churna in the management of Amavata: In this study, 32 patients diagnosed with Amavata were selected, and 30 of them received the treatment. The patients were administered Ajamodadi churna at a dose of 3 grams twice daily for 60 days. The assessment criteria included clinical symptoms—such as Sandhi Shoola, Sandhi Shotha, Sparshasahyata, Stabdhatta, Raga, and Ushnata—and laboratory investigations, including ESR and RA factor. Statistical analysis showed that all parameters yielded statistically significant results, with $p < 0.05$ for RA factor and ESR, and $p < 0.001$ for symptomatic relief.¹⁸

Case study on role of Baluka Sweda and Ajamodadi churna in the management of Amavata: In this study, Baluka Sweda and Ajamodadi churna were used to treat a 45-year-old female

patient with Rheumatoid Arthritis. Baluka Sweda was applied to the affected joints as a local therapy, while Ajamodadi churna (3g) mixed with lukewarm water was administered orally twice daily for 60 days. After the treatment, the patient experienced no severe symptoms, ESR levels decreased, although the RA factor remained unchanged. Overall, the treatment showed a positive effect in managing Amavata.¹⁹

Clinical study on effect of Ajamodadi churna and Kati Basti in the management of Gridhrasi: A comparative study was conducted on 30 patients with Gridhrasi, divided into two groups of 15 each. Group-A received 4 grams of Ajamodadi churna with warm water three times a day (TID) for 21 days. Group-B was treated with 4 grams of Ajamodadi churna TID for 21 days, along with Kati basti using Sahacharadi taila for the first 7 days. Group-B showed better improvement than Group-A in terms of symptoms like ruk, toda, spandana, and SLR (Straight Leg Raise). Overall, Group-A showed a 44.88% improvement, while Group-B showed a 51.36% improvement.²⁰

Clinical study on Ajamodadi churna and Eranda taila in the management of Amavata: A total of 20 patients with Amavata were selected for the study, and 17 patients completed the treatment. The trial drugs, Ajamodadi churna (5g twice daily with lukewarm water) and Eranda Taila (10ml twice daily), were administered to the patients. Out of the 17 patients, 10 were cured, 1 showed marked improvement, 11 had moderate improvement, 5 showed mild improvement, and 1 remained unchanged. The analysis was conducted using the Friedman test, which revealed significant ($p < 0.001$) changes in the subjective criteria.²¹

Effect of castor oil, Ajamodadi churna and Ruksha sweda on inflammatory mediators and Amavata: Conducted by Mishra PK et al., the studies involved a total of 20 patients with rheumatoid arthritis (RA), of which 17 patients completed a 3-month treatment regimen. The patients were given 5g of Ajamodadi churna twice daily with lukewarm water, along with 10ml of Eranda taila twice daily. Ruksha sweda was applied intermittently on the affected joints for 5-10 minutes per day. One study reported a marked improvement in the blood titre of inflammatory mediators, with the Wilcoxon signed-rank test showing significant results.²² The other study reported marked improvement in clinical symptoms, and the Friedman test also showed significant results.²³

Case report on the management of lingual papillitis through Ayurveda: In this study, a 35-year-old male patient presented with primary complaints of pain and multiple nodular growths on the dorsal surface of his tongue, which had been present for four months. The condition was diagnosed as Pittaja Jihvakantaka. The treatment plan included 5g of Ajamodadi churna twice daily with water before meals, along with other medications namely, Triphala guggulu, Kamadudha rasa, Sutashekhara Rasa, Haridra khandha, and Pratimarsha Nasya using Anu taila and Yashtimadhu taila. After four months of treatment, the associated symptoms significantly improved.²⁴

Case report on management of Amavata with Ayurvedic intervention: A 46-year-old female patient presented with chief complaints of Shula, Shotha and Sthambha in multiple joints, particularly in the morning, for the past 4 years. She also reported symptoms of Klama, Aruchi, Gaurava, Mutradaha and Malasanga. The treatment initially involved pachana and deepana therapies along with Baluka sweda for the first seven days. Shamana chikitsa included Simhnad guggulu, Dashmoola kwatha, and Ajamodadi churna, wherein Ajamodadi churna was administered for 3 months and 25 days. After the treatment, there was a reduction in ESR, RA factor, and Anti-CCP levels. The

visual analogue scale for subjective symptoms improved from a score of 10 at the first visit to a score of 2 at the seventh visit. The patient's complaints subsided, and her quality of life significantly improved.²⁵

Case report on the management of juvenile spondyloarthropathy through Ayurveda: A 15-year-old boy, unable to stand or walk due to vedana and shotha in the large joints of his body, was diagnosed with Amavata (juvenile spondyloarthropathy). He was treated with Mishreya arka for deepana-pachana, along with Ajamodadi churna and other medications, including Simhanada guggulu, Lakshadi guggulu, Maharasnadi kashayam and Dashmoolarishtam for a duration of 3 months. Shankha vati and Rheumayoga gold were added in the following weeks. Additionally, Baluka sweda and Kshara basti were administered. This treatment resulted in complete remission of all symptoms, including pain and swelling in the joints. ESR levels decreased, and CRP was negative after treatment.²⁶

Management of Amavata through Ayurvedic medicines: A 29-year-old male patient presented with pain and swelling in the joints for the past six months, along with symmetrical pain in both wrist joints, morning stiffness, anorexia, and lack of enthusiasm. The treatment included Aamvatari rasa, Ajamodadi churna (3g twice daily), Ras sindoora, Maharasnadi kwatha, Simhanada guggulu, Agnitundi vati, Tankana bhasma and Makardhwaja rasayana. After one month of therapy, the patient reported complete relief from all symptoms.²⁷

Clinical study on effect of Ajamodadi churna in the management of Amavata: A total of 20 patients with rheumatoid arthritis were selected, of which 15 completed the 3-month treatment. The patients were instructed to take 5g of Ajamodadi churna twice daily with lukewarm water for the entire 3-month period. Assessment was conducted based on both subjective and objective parameters. Statistical analysis was performed using the Friedman test, and significant changes were observed in all parameters except for 'tenderness'.²⁸

Retrospective study on effect of Ayurvedic treatment procedure in Gridhrasi: This study was conducted on 22 patients with Gridhrasi. The signs and symptoms included low back pain radiating to the Sphik, Kati, Prishtha, Uru, Janu, and Jangha, along with Stambha, Toda and Gourava. The treatment regimen included Simhanada guggulu, Ajamodadi churna and Haritaki churna for 4 weeks, along with Kati basti using Mahanarayana taila for 2 weeks. Results were assessed based on symptom improvement, and statistical analysis using the t-test ($p < 0.001$) indicated significant results.²⁹

Case report on conservative management of Amavata through Ayurvedic treatment: A 50-year-old female presented with pain in the lower back, legs, and knee joints, along with swelling in both knees and restricted movement for the past five years. The patient was also under regular treatment for hypertension and ischemic heart disease (IHD). She was diagnosed with Sthaulya (BMI 30) and Amavata. Initial treatment included Ama Doshahara drugs for the first four days. 'Udvardana' along with Ajamodadi churna, Trayodashanga guggulu, Medoharavati, Rasnadi kashayam and Shankha vati were administered. Oil massage, sudation, Kati basti, and Janu basti were administered as required. VAS score for the left leg decreased from 7/10 to 2/10, while the right leg decreased from 6/10 to 3/10. Additionally, there was a significant reduction in low back pain, and the patient's walking distance gradually increased.³⁰

Clinical evaluation of the effect of Ajamodadi churna and Vaitarana basti in the management of Amavata: A total of 68 patients with Amavata were selected for the study, of which 60 completed the treatment. After performing Mala shodhana using Triphala swarasa, Giloy satva, and Eranda taila, Ajamodadi churna (3g/day) was administered for two months, along with Vaitarana Basti for eight days. Significant improvements ($p < 0.001$) were observed in pain, swelling, morning stiffness, tenderness, total count (TC), ESR, rheumatoid factor (RF), and health assessment questionnaire scores for rheumatoid arthritis (RA).³¹

DISCUSSION

Literary review on Ajamodadi churna across various Ayurvedic classics revealed description of six different formulations bearing this name. Ajamodadi churna mentioned in the AFI is taken from Sharangadhara Samhita and is indicated in Kaphaja and Vataja roga. A total of twenty-eight research articles and two review articles on Ajamodadi churna were found during the search. Among twenty-eight research articles, twenty-three articles provided the classical reference of Ajamodadi churna used in the study. Twenty-two of them were consistent with AFI reference while one was a pharmaceutical study on preparation of chewable tablet from the formulation explained under Swarabedha.³²

The twenty-eight research articles consisted of eight pharmaceutical and analytical studies, six preclinical studies, and fourteen clinical studies. Out of eight pharmaceutical studies, one focused on standardization, three on modification and four on the evaluation of components through instrumental analysis. These pharmaceutical studies have provided valuable information on the purity, safety and quality of in-house and market-available Ajamodadi churna formulations.

Among the six preclinical studies, two focused on anti-oxidant activity, one on antibacterial activity and three on anti-inflammatory and anti-arthritis activities. These preclinical findings support the pharmacological actions of Ajamodadi churna, demonstrating its antioxidant, anti-inflammatory, and anti-arthritis properties. The antibacterial study highlighted the broad-spectrum antimicrobial activity of the formulation.

Out of the fourteen clinical studies, ten focused on Amavata, two on Gridhrasi, and one each on juvenile spondyloarthropathy and lingual papillitis. The ingredients of Ajamodadi Churna possess Pachana (digestive), Vatanulomana (restoring normal movement), and Shulahara (pain-relieving) properties,³³ making it primarily indicated for conditions associated with Ama and Vata. Additionally, most of the ingredients in Ajamodadi Churna are easily accessible and the preparation method is simple, making it a cost-effective option for treatment. Given that Amavata is a common condition in clinical practice, majority of these studies focused on treating Amavata. The study on lingual papillitis, a first-of-its-kind investigation, emphasized the action of Ajamodadi churna on Shotha and Ama. Overall, these studies demonstrate that Ajamodadi churna is effective in treating the mentioned conditions, either alone or in combination with other treatments, depending on the pathology.

CONCLUSION

Ajamodadi churna is one of the most commonly prescribed formulations by Ayurvedic practitioners, specially, for the treatment of Amavata. Numerous research studies have been conducted to standardize the formulation, understand its pharmacological activities, and revalidate its therapeutic effects. Based on these studies, it has been established that Ajamodadi

churna is effective in treating conditions such as Shvayathu, Amavata, Sandhi peeda, and Gridhrasi.

REFERENCES

- Shree Nagindas Chaganlal Shahrasavaidya. Akaradi churna prakarana. In; Nivaranachandra bhattacharya(editor). Bharata Bhaishajya Ratnakara. Vol. 1. Reprint August 1999 ed. New Delhi: B Jain Publishers; 1999. p.18
- Anonymous. The Ayurvedic Formulary of India. 2nd edition. Part-I. Section-7, Churna. Delhi: The controller of publications civil lines; 2003. p. 106
- Pandit Sharangadharacharya. Sharangadhara Samhita. In; Pandit Parashurama Shastri, Vidyasagar(editor). 5th ed. Madhyama khanda chapter 6, Churna Kalpana, verse 113-117. Varanasi: Chaukhambha Orientalia; 2002. p. 191
- Sriwastava NK, Shreedhara CS, Ram HNA. Standardization of Ajmodadi churna, a polyherbal formulation. Pharmacognosy Research. 2010 Mar;2(2):98-101
- Gupta V, Jain U. K. Development of fingerprints for an ayurvedic formulation Ajmodadi churna, via piperine estimation by UV-Spectrophotometry. Current Pharma Research. 2011,1(2),165-168.
- Ramanjaneyulu K, Shrivastava AK, Singh N. TLC and HPLC fingerprint development of *Trachyspermum ammi* Linn. and its polyherbal marketed formulations, "ajmodadichurna". Asian journal of pharmaceutical science & technology. 2013, 3(1), 40-46.
- Singh N, Ramanjaneyulu K. GC fingerprint development of *Trachyspermum ammi* Linn. and its marketed polyherbal formulations "Ajmodadi churna" International Journal of Research in Pharmacy and Chemistry. 2016, 6(3), 511-517.
- Pandey A, Tabbasum N. Study on elemental analysis, pesticides, antioxidant, marker compound and validation of conversion of Ajmodadi Churna, an Ayurvedic formulation into suitable dosage form, Indian Journal of Traditional Knowledge. 2023 July, 22(3), 537-542
- Nisha Somavanshi, Tanvi Dodiyaand Disha Prajapati. Development and Validation of HPTLC Method for Simultaneous Estimation of Piperine and Scopoletin in Ajmodadi churna. Journal of Natural Remedies, January 2023, Vol 23 (1), pp 143-148.
- Dr. Abhilash Rajendra Dharamthok, Dr.Mahantesh. B. Rudrapuri, and Dr. G. Vinay Mohan. (2019). "Pharmaceutico - analytical standardization of Ajmodadi choorna and its drug modification as Ajmodadi chewable tablet." International Journal of Research -Granthaalayah, 7(8), 431-437. <https://doi.org/10.29121/granthaalayah.v7.i8.2019.696>.
- Dr.Vimixa Patel, Prof. Anup Thakar, Harisha C. R., Shukla V.J. Pharmacognostical and pharmaceutical evaluation of polyherbal formulation Ajmodadi vataka. Journal of Emerging Technologies and Innovative Research. May 2020, 7(5) pp 458-464
- Sriwastava NK, Shreedhara CS, Aswatha Ram HN. In-vitro free radical scavenging activity of Ajmodadi churna a polyherbal formulation. Journal of pharmacy research, 2010; 3: pp 1467-70.
- Tambekar DH, Dahikar SB. Antibacterial activity of some Indian ayurvedic preparations against enteric bacterial pathogens. Journal of Advanced Pharmaceutical Technology and Research. 2011;2:24-9.
- Aswatha Ram HN, Sriwastava NK, Makhija IK, Shreedhara CS. Anti-inflammatory activity of *Ajmodadi Churna* extract against acute inflammation in rats. Journal of Ayurveda and Integrative Medicine. 2012;3:33-7.
- Srivastava, N., Dashora, N., Menaria, J. and Kumar, N., 2016. Evaluation of Anti-inflammatory and Anti-arthritis Activity of Ajmodadi Churna- A Polyherbal Formulation. International Journal of Pharmaceutical and Phytopharmacological Research. October 2016, 6(5), pp.72-76
- Sharma V, Shukla S S, Gidwani B, Pandey R K. Antiarthritic Activity and Inflammatory Mediators Modulation Effect of Traditional Ajmodadi Churna on Arthritis Experimental Model. Journal of Pharmacopuncture 2023;26(3):257-264
- Kaur G, Gupta V, Bansal P. Innate antioxidant activity of some traditional formulations. Journal of Advanced Pharmaceutical Technology and Research. 2017;8:39-42.
- Trivedi AB, Mahajan N, Malakay R, Khatotra S. Clinical evaluation of ajmodadi churna in the management of Amavata w.s.r.to rheumatoid arthritis. International Ayurvedic Medical Journal. Oct 2015, 3(10): 3137-3144
- Basotra S, Sharma R. A case study on role of baluka sweda and Ajmodadi churna in the management of amavata (rheumatoid arthritis). Indian journal of applied research. november 2019, 9(11): 62-63
- Dr. Akhilanath Parida, Dr.Satyasmita Jena. A Comparative Clinical Study on the effect of Ajmodadi Churna and Kati Basti in the management of Gridhrasi w.s.r.to Sciatica. Journal of Ayurveda and Integrated Medical Sciences. 2019;4(1):1-6.
- Mishra Pramod Kumar, Rai N.P. A clinical study on Ajmodadi churna and Eranda taila in the management of Amavata (Rheumatoid arthritis). International Research Journal of Pharmacy. 2013; 4(6):211-213
- Mishra PK, Rai NP. Combined effect of castor oil, ruksha sweda and a polyherbal compound on inflammatory mediators in rheumatoid arthritis. World Journal of Pharmaceutical Sciences. 2014; 2(4): 265-269
- Mishra PK, Rai NP. Effect of Castor Oil along with Ajmodadi Churna and Ruksha Sweda in the Management of Rheumatoid Arthritis vis-a-vis Amavata. International Journal for Pharmaceutical Research Scholars. 2014, 3(1); pp 566-572
- Bavalatti N, Rajagopala M, Dabas A. A case report on the management of lingual papillitis through Ayurveda. Journal of Ayurveda Case Reports. 2022;5(3):108-111.
- Archana Shukla, Kundan Wasnik, Rama Kant Yadava. Successful management and withdrawal of conventional medicine in Amavata patient (Seropositive Rheumatoid Arthritis) with an Ayurvedic intervention: A Case Report. Journal of Ayurveda and Integrated Medical Sciences. 2022;7(8):162-170.
- Verma J, Bhojar B, Management of juvenile spondyloarthropathy through Ayurveda:- a case report, Journal of Ayurveda and Integrative Medicine. <https://doi.org/10.1016/j.jaim.2020.06.008> (accessed on December 2023)
- Gauttam SP. Management of amavata through ayurveda medicines: a case report. World Journal of Pharmaceutical and Medical Research. 2022, 8(2): 196 – 199.
- Mishra Pramod Kumar, Rai N.P. Effect of a polyherbal compound in the management of Amavata (Rheumatoid arthritis). Journal of Biological and Scientific Opinion. 2014;2(5):288-291
- Rai S, Rai A, Ravte RK, Mitra A and Hazra J. Efficacy of ayurvedic treatment procedure on Gridhrasi (lumbo sciatica syndrome) in an Ayurvedic hospital - A retrospective study. World Journal of Pharmaceutical and Life Sciences. 2016, 2(2): 160-167.
- Kulkarni SP, Kulkarni PS. Conservative Management of Osteoarthritis with Hypertension and Ischaemic Heart Disease through Ayurvedic Treatment: A Case Report. Journal of Clinical and Diagnostic Research. 2023 Oct, Vol-17(10): KD01-KD03

31. Deka B, Gupta OP, Sarma BP. Clinical evaluation of the effect of Ajamodadi churna and vaitaran basti in the management of amavata (rheumatoid arthritis). *Journal of Emerging Technologies and Innovative Research*. August 2020, 7(8): 1040-1053
32. Shastri AD. Bhaishajya Ratnavali of Sri Govinda dasa sena with Vidyotini hindi commentary by Sri Brahmashankara Mishra, edition 2022. Chapter-17, Swarabedha chikitsa prakarana, verse -6, Varanasi: Chaukhambha Prakashan, 2022; p.475
33. Apeetha S, EA Soumya. Clinical efficacy of Ajmodadi choornam: A critical review. *Journal of Medicinal Plants Studies* 2022; 10(4): 102-105

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