

**PRELIMINARY STUDY ON ASSURANCE OF QUALITY AND EFFICACY OF *NIRGUNDI* (VITEX NEGUNDO) W.S.R. TO *AMAVATA***

**Raja Ram Mahto¹, Shakuntala Sundi², Laxmeshwer Mandal³, Debasis Biswal⁴,
Niranjan S⁵**

¹Assistant Professor, Dept. of Kayachikitsa, All India Institute of Ayurveda, New Delhi.

²Senior Medical Officer, Govt. of Jharkhand.

³Principal, Institute of Medicine (IOM), Tribhuvan University, Nepal.

⁴Reader, Dept. of Kayachikitsa, Major SD Singh PG Ayurvedic Medical College and Hospital, Farrukhabad, Uttar Pradesh.

⁵Reader, Dept. of Kayachikitsa, Major SD Singh PG Ayurvedic Medical College and Hospital, Farrukhabad, Uttar Pradesh.

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***Corresponding Author**

Dr. Debasis Biswal

Reader, Dept. of
Kayachikitsa, Major SD
Singh PG Ayurvedic
Medical College and
Hospital, Farrukhabad, Uttar
Pradesh.

ABSTRACT

Amavata is a chronic joint disease in which vitiation of *Vata dosha* and accumulation of *Ama* take place in joint(s), and it simulates with Rheumatoid arthritis in modern parlance. In our classical texts different treatment modalities and formulations were described for treating *Amavata* (Rheumatoid arthritis) which nowadays has been considered as a challenging disorder to cure. In the present clinical study 38 cases suffering from *Amavata* were selected, divided into 3 phases and prescribed *Nirgundi patra Swarasa*, *Nirgundi Ghana vati*, and *Nirgundi Patra Pinda Sweda* along with *Nirgundi Ghana vati*. The study revealed that *Nirgundi Swaras* showed 60% moderate improvement in the symptoms of *Amavata*, whereas when we used externally *Nirgundi patra Pinda Sweda* with *Nirgundi Ghana vati* all

the patients got relieved from the symptoms like pain and stiffness.

KEYWORDS: Amavata, Nirgundi swarasa, Nirgundi Ghana vati, Nirgundi patra pinda sweda, Rheumatoid arthritis.

INTRODUCTION

There is a need of standard method for identification of plant species so that results of drug must be homogenous in different studies, for which we have to use standard methods. Here we used a method of proper identification of drug and compared by Ayurvedic pharmacopeia of India (A.P.I.). We did the work like pharmacognostic, pharmaceutical and clinical study to standardize the protocol of identification of *Nirgundi* (*Vitex negundo*) and its efficacy in *Amavata*. Regarding *Nirgundi* (*Vitex negundo*) in the text Charaka Samhita, it was chiefly used in *Vatavyadhi Chikitsa* for dispelling inflammatory swelling of the joint and as an analgesic. Bhavaprakasha has also mentioned *Sleshma Vatahara* according to its *Guna Karma*. Though, *Amavata* is one such disease which is categorized the pain as “*Vrischika Dansavat Vedana*”^[1] (pain as scorpion bite) in ancient literatures. It is a disease of chronic joint and body pain, stiffness, accompanied by a swelling of some or all of the synovial joints.^[2] The clinical manifestation of *Amavata* is similar to that of Rheumatoid arthritis (RA). *Nirgundi* is very effective drug for *Amavata* due to its *vedana sthapaka*, *Vatashamaka* and *Ama pachana* properties.^[3] Hence consequent study was designed to evaluate the efficacy of *Nirgundi patra Swaras*, *Nirgundi Ghana vati*, and *Nirgundi Patra Pinda Sweda* in *Amavata*.

Collection and Identification

Collection of raw drug: All the raw drugs for the purpose of research work were collected from the nearby village area of Jamnagar during the period of November-December. *Nirgundi* (*Vitex negundo*) is a large shrub popularly grown in waste places around villages, river banks, and moist localities in the deciduous forest throughout the country.

Identification of raw drug: The correct identity and authenticity of *Nirgundi* (*Vitex negundo*) was confirmed by studying its organoleptic and powder microscopy with direct contact with subject experts of Pharmacognosy Department, Gujarat Ayurved University, Jamnagar, and then comparing them with the characters mentioned in A.P.I. Unicellular, bicellular trichomes and also glandular trichomes, stomata, parenchymatous tissue with well developed collenchyma; pericyclic fibres present in the form of a discontinuous ring with horse shoe-shaped vascular bundle; a few hairs and palisade layers containing chlorophyll were present in powder microscopy.

Purity and Strength: It was taken special care for the presence of no foreign matter during drying and collection of raw drug, so that there was least chance of the presence of foreign

particles. After following all the requisite steps to maintain the purity as per the guidelines of A.P.I. the collected drug and the strength of the drug were assumed to be homogenous.

Preparation of *Nirgundi Swarasa*: For this purpose we selected the plant of *Nirgundi* (*Vitex negundo*) from the herbarium garden of Gujarat Ayurved University, Jamnagar. Every day morning all patients had advised to take 20 ml of *swarasa* (juice) which need approximately 15-20 leaves of *Nirgundi* (*Vitex negundo*). With the help of mortar and pistil *Nirgundi swarasa* was prepared by the author and served directly to the patients for maintaining the quality and quantity of drug.

Preparation of *Nirgundi Ghana vati*: Collected leaves were dried properly and dried *Nirgundi patra* were taken for decoction preparation. In this process first preparation of *Kwatha* (decoction), *Ghana* (dried decoction/extract) and then *Ghana vati* (pills of dried decoction) were made. *Ghana* preparation was intermediate preparation for manufacturing of *Vati* (pills) from *Kwatha*. Color of semisolid *Ghana* was brownish red like coffee with shining. Tray dryer was used to evaporate the water portion from semisolid *Ghana* at 50-60°C approximately 10-12% of *Ghana* was calculated from the weight of raw material. Very fine *Nirgundi Patra* powder and Talc and magnesium stearate were used as lubricant and binding agent in the manufacturing process of *Vati*. Each *Vati* (pills) was made up of approx 500 mg in weight. In physico-chemical study average weight of pills, hardness of pills, and disintegration time of the pills were observed. The pills had hardness more than 3 kg/cm² and disintegration time was more than 1hour.

Preparation Of *Nirgundi Patrapinda Sweda*: Every day morning the leaves of *Nirgundi* (*Vitex negundo*) were collected from the herbarium garden and fried it in *Tila Taila* with a piece of lemon and *Saindhava Lavana* (rock salt) quantity sufficient. For which need approximately 25-30 leaves of *Nirgundi*. Fried leaves are tied in cotton cloth and make a *Pottali* (bolus), which was used for *Pottali Swedana* (heat) with *Tila Taila*. With these preparations, we conducted the clinical trial to establish the efficacy in three phases.

MATERIALS AND METHODS

Clinical studies were done with objectives to assess the role of *Nirgundi Swarasa*, *Nirgundi Ghana vati* and *Nirgundi Ghana vati* with *Nirgundi Patra Pinda Sweda* in the patients. Total 38 patients of *Amavata* were treated in three different studies in different patients. In first phase, 10 patients were given *Nirgundi patra Swarasa* in the dose of 20 ml twice a day for 30

days. In second phase, 14 patients were given *Nirgundi Ghana vati* in the dose of 1 gm twice a day for 30 days. In third phase, 14 patients were given *Nirgundi Ghana vati* 1 gm thrice a day for 30 days with *Nirgundi Patra Pinda Sweda*. *Nirgundi Patra Pinda Sweda* was administered in 3 stage each of 7 days duration with a resting period of 3 days in each phase. These 3 days resting period was utilized for *Rukshana Kriya* (dryness).

OBSERVATIONS AND RESULTS

Drug provided highly significant relief in cardinal and general symptoms of the disease *Amavata*. Among the three clinical trials, *Nirgundi Swarsasa* has shown good result to overcome the symptom pain and tenderness, while *Nirgundi Ghana Vati* was shown good result in the symptoms like edema and stiffness. When we use *Nirgundi Ghana vati* with *Nirgundi Patrapinda Sweda* it gives the overall result in all the cardinal symptoms and patient respond very quickly after administration of the drug by internally and externally.

Table. 1: Relief in Cardinal symptoms.

% relief in Cardinal symptoms	Phase I <i>Nirgundi Patra Swarasa</i> ^[4]	Phase II <i>Nirgundi Ghana vati</i> ^[5]	Phase III <i>Nirgundi Ghana vati with Nirgundi Patrapinda Sweda</i> ^[6]
<i>Sandhishula</i> (pain in joint)	73.91	64.73	71.53
<i>Sandhishotha</i> (edema in joint)	65.00	66.43	72.00
<i>Sandhigraha</i> (stiffness in joint)	70.00	66.66	78.26
<i>Sparsha-asahyata</i> (tenderness in joint)	72.00	65.00	77.27

Prescription of *Nirgundi* (*Vitex negundo*) provided cumulative relief on general symptoms^[7] which included - *Anaha* (distention in abdomen), *Daha* (burning sensation), *Nidralpata* (sleeplessness), *Trishna* (thirst), *Asya Vairasya* (tastelessness), *Alasya* (lethargic feeling), *Daurbalya* (weakness), *Angamarda* (bodyache), *Agnimandya* (indigestion), *Aruchi* (loss of appetite), *Hrillasa* (nausea tendency), *Kandu* (itching), *Kukshishula* (pain in abdomen), *Shrama* (exertion feeling), *Vibandha* (constipation), *Jwara* (fever), *Bahumutrata* (polyurea) and *Gaurava* (heaviness) in all the three clinical trials.

Table. 2: Overall Effect of the Therapy.

% relief in Cardinal symptoms	<i>Nirgundi swarasa</i>	<i>Nirgundi ghanavati</i>	<i>Nirgundi ghanavati with nirgundi patrapinda sweda</i>
Complete remission	0.00	0.00	0.00
Marked improvement	10.00	14.28	7.14
Moderate improvement	60.00	28.56	57.14
Mild improvement	20.00	35.70	35.71
Unchanged	10.00	21.42	0.00

In overall therapy none of the patient got complete remission in the cardinal symptoms as well as general symptoms, but it seems that most of the patient got moderate to mark improvement. *Nirgundi Swarasa* shows 60% moderate improvement in the symptoms, while when we used externally *Nirgundi patra Pinda Sweda* with *Nirgundi Ghana vati* all the patients got relieved from the symptoms like pain and stiffness.

DISCUSSION

Nirgundi (*Vitex negundo*) is an aromatic shrub or a small tree, common in waste places around villages commonly known in the name of Sinduar or Sambhalu. Its leaves are mostly trifoliate, occasionally pentafoliate; in pentafoliate leaf inner three leaflets have petiolule and remaining two sub-sessile.^[8] No foreign matter during drying and collection of raw drug or very rare foreign particles may be there. API also not allows the foreign matter more than 2 Per cent. When viewed in powder microscopy it is having a number of unicellular, bicellular trichomes and also glandular trichomes, stomata, parenchymatous tissue with well developed collenchyma; pericyclic fibres present in the form of a discontinuous ring with horse shoe-shaped vascular bundle; a few hairs and palisade layers containing chlorophyll. All these characters are as per API standard. Prepared pills had hardness more than 3 kg/cm² and disintegration time was more than 1hour, so that it was easily dissolve in stomach and intestine. Freshly collected leaves yield a pale greenish yellow oil on steam distillation. The main constituent of the oil are aldehyde, ketone, phenolic derivative and cineol. The leaves contain 2 alkaloids nishindine and hydrocotylene with vitamin C and carotene.^[9] When we see the action of the drug *nirgundi* we found that the extract of leaves was possessing anti-inflammatory and antibacterial properties.^[10] Decoction of the leaves and the vapours are employed in baths for the treatment of febrile, catarrhal and rheumatic affections.^[11] Decoction of the leaves was found to prevent the development of swellings of joints. In pharmacological study in albino rates leaves possess discutient properties and are reported to be applied to rheumatic swellings of joints, in sprains, etc.^[12] Ayurvedic literature established the *Rasapanchaka* and *Karma* of *Nirgundi*.^[13] Properties are against the *Guru* (heavy), *Snigdha* (moist), *Picchila* (sliminess), *Sheeta* (cold) properties of *Ama* (free radicals), also some effect of anti-oxidant property of *Nirgundi Patra* over *Ama* (free radicals). *Ama* formation is stopped by the *Deepaniya* action and it does *Srotoshodhana* (cleanliness of chanel) and relieves the symptoms of *Sandhishula* (pain in the joints), *Shotha* (swelling), *Alasya* (laziness), *Aruchi* (loss of taste) etc. *Nirgundi* is also described as *Rasayana* (immunomodulator). Hence, it could have helped to generate a good quality of *Dhatu*.

Properties of *Nirgundi* like immunomodulator (Rasayana) helps to overcome the immunological derangement induced Rheumatoid Arthritis by boosting one's immunity which breaks the pathogenesis of the disease. *Rasayana* (immunomodulator) drugs activate cellular metabolism, modulate the immune system and increase and activate body's own antioxidants and radical scavengers.^[14] *Balya, Rasayana, Jwaraghna Shothghna Vedanasthapana* properties of *Nirgundi* helps in reducing the symptoms like *Shoola, Shotha, Jwara* & also increases the immunity of the individual. Due to *Ushnatwa* and *Amapachaka* properties of *Nirgundi*, local therapy (by *Nirgundi Patra Pinda Sweda*) gave better relief in *Shoola, Gaurava, Stabdhata, Shotha*.

CONCLUSION

From this study we get a standard method of identification of drug which certified the method what API mentioned. Drug therapeutically provided highly significant relief in cardinal symptoms as well as cumulative relief on general symptoms of *Amavata*. *Nirgundi* and its formulations significantly reduced the knuckle swelling, increased the range of joint movement and foot pressure. It also highly significant improved the walking time and general function capacity. Though, most of the patients were suffering from the disease since long period that also contributed for slow recovery. Patients of this disease require long duration of the therapy. However, results of this therapy provide good hope for the patients of *Amavata*. The findings of the clinical trials on limited sample sizes indicated the efficacy of *Nirgundi* that had led to revive the research interests in carrying out research works in larger populations of various climatic conditions.

REFERENCES

1. Madhav Nidan of Shri Madhavakar with Madhukosh Sanskrit commentary by Vijayrakshita and Shri Kantha Dutta with the Vidyotini hindi commentary and notes by shri Sudershan Shastri revised and edited by Pof. Yadunandan Upadhyay, Chaukhabha Sanskrit Sansthan Varanasi 27th edition 1998, *Amavata Nidana*, 25/6: 462.
2. Anjana Nidana by Maharishi Agnivesha commentary by Bramahanand Tripathi in Sharangdhar Samhita, Chaukhabha Surbharti Prakashan Varanasi reprinted at 2004 sloka no. (116-117).
3. Bhavaprakash Nighantu of shri Bhavamishra, commentary by K C Chunekar, Chaukhabha Bharti Akadami Varanasi, reprint, 2002; 344 sloka no. 113.

4. Mandal Laxmeshwer, M.D. thesis, A clinical study of Nirgundi patra swaras and Tryodasang Gugulu, in the management of Amavata; -2004-KC-IPGT&RA, GAU, Jamnagar.
5. Raja Ram Mahto, M.D. thesis, A comparative clinical study of Nirgundi Ghanavati and Matarabasti in the management of Amavata; -2006-KC-IPGT&RA, GAU, Jamnagar.
6. ShakuntalaSundi, M.D. thesis, Nirgundi Ghan Vati & Tindukamrita capsule with Nirundi Patra Pinda Sweda Amavata -2008-KC-IPGT&RA, GAU, Jamnagar.
7. Madhava nidan Madhav nidan of shri Madhavakar with Madhukosh Sanskrit commentary by Vijayrakshita and Shri kantha Dutta with the Vidyotini hindi commentary and notes by shri Sudershan Shastri revised and edited by Pof. Yadunandan Upadhyay, Chaukhabha Sanskrit Sansthan Varanasi 27th edition 1998, Amavata Nidana 25/6- P -462.
8. The Ayurvedic pharmacopeia of India (API) Government of India Ministry of health and family welfare, Department of health, Part I, 1st edition Vol 4: 85,86.
9. Sharma J. Sci. Industr. Res. 1955,14B; 267 Ghose and Krishna, J. Ind. Chem. Soc;1936, 13, 634; Basu et.al. *ibid*;1647,24,358; Hansel et. al; *Phytochemistry* 1965,4,19;Banerjee et al 1969,8,511;Asian health and environment and allied database, ahead niscom (CSIR) -1998.
10. Maini and Morallo-Rejesus , Philip J. Science, 1992, 121, 39 ; Asian health and environment and allied database, ahead niscom (CSIR) -1998.
11. Kirit and Basu, III, 1938-40; Chaturvedi and Singh, Indian J. med. Res. , 1965,53 71 ;Asian health and environment and allied database, ahead niscom (CSIR) -1998.
12. Bhagwan Das and Vedi, ISI Bill; Asian health and environment and allied database, ahead niscom(CSIR) -1998.
13. Sharma P V,Dravyaguna Vigyan; Chaukhabha Sanskrit Sansthan Varanasi 27th edition 1982, Nirgundi P-223.
14. [http://sandeepaniayurveda.blogspot.com\(06.01.2008\)](http://sandeepaniayurveda.blogspot.com(06.01.2008)).