

**PHARMACEUTICO- ANALYTICAL STUDY OF NIMBA BEEJ TAILA**<sup>1</sup>\*Dr. Archana Yadav, <sup>2</sup>Prof. Anjana Dwivedi, <sup>3</sup>Dr. Rajeev Narayan Bilas<sup>1</sup>M.D. Scholar, Post Graduate Department of *Rasa Shastra* and *Bhaishajya Kalpana*, State Ayurvedic College and Hospital, Lucknow Uttar Pradesh.<sup>2</sup>Department of *Rasashastra* and *Bhaishajya Kalpana*, State Ayurvedic College and Hospital, Lucknow.<sup>3</sup>Department of *Rasashastra* and *Bhaishajya Kalpana*, Lalit Hari State P.G. Ayurvedic College and Hospital, Pilibhit.**\*Corresponding Author: Dr. Archana Yadav**M.D. Scholar, Post Graduate Department of *Rasa Shastra* and *Bhaishajya Kalpana*, State Ayurvedic College and Hospital, Lucknow Uttar Pradesh.DOI: <https://doi.org/10.5281/zenodo.18800367>**How to cite this Article:** <sup>1</sup>\*Dr. Archana Yadav, <sup>2</sup>Prof. Anjana Dwivedi, <sup>3</sup>Dr. Rajeev Narayan Bilas. (2026). Pharmaceutico-Analytical Study of Nimba Beej Taila. *World Journal of Pharmaceutical and Medical Research*, 12(3), 390–396.

This work is licensed under Creative Commons Attribution 4.0 International license.



Article Received on 31/01/2026

Article Revised on 21/02/2026

Article Published on 01/03/2026

**ABSTRACT**

*Sneha Kalpana* is a kind of secondary *Kalpana* having oleaginous base derived from primary *Kalpana*. *Taila* is one such *Kalpana*, which is a considerate pharmaceutical procedure in *Ayurvedic* pharmacies to obtain semi solid oleaginous dosage form used in different diseases for systemic or topical application. *Nimba Beej Taila* is medicated oil preparation used for *Akala Palitya* (early greying of hair). Proposed drug “*Nimba Beej Taila*” is mentioned in *Sharangdhar Samhita (Madhyam Khand)*, *Vang Sen (Kshudra Rogadhikar)*, *Vrunda Madhav (Kshudra Rogadhikar)* and in *Bhaishajya Ratnavali (Kshudraroga chikitsa)* for the treatment of *Palitya*. It is prepared with ingredients like *Nimba Beej*, *Vijayasara* and *Bhringraj*. It is an attempt made to validate the pharmaceutical and analytical parameters of *Nimba Beej Taila*. Three batches of *Nimba Beej Taila* were prepared. Pharmaceutical study of batches and its standardization was done. To establish standards of *Nimba Beej Taila*, physicochemical and chromatographical methods were performed.

**KEYWORDS:** *Sneha Kalpana*, *Nimba Beej*, *Akala Palitya*, Pharmaceutical study.**INTRODUCTION**

Within the *Ayurvedic* pharmacopoeia, *Taila* (medicated oil) is regarded as the optimal edible fat from a nutritional perspective. It possesses inherent beneficial properties and serves as a critical vehicle for enhancing the therapeutic efficacy of herbal drugs incorporated during its preparation. When administered in this lipid-based form, medicinal agents demonstrate superior pharmacokinetic properties, including rapid digestion and systemic absorption. Furthermore, *Taila* exhibits a notable capacity for deep tissue penetration, enabling the delivery of therapeutic agents to distant physiological sites.

Within the *Ayurvedic* paradigm, hair is conceptualized as a *Upadhatu* of the *Asthi dhatu*, with its development traceable to the seventh gestational month. Lustrous, dark hair represents a significant cosmetic ideal, contributing substantially to individual confidence. Premature greying, termed *Palitya*, presents a common concern. While greying associated with advancing age (*Kalajaneet Palitya*) is a natural phenomenon, premature

onset often correlates with chronic stress, environmental pollution, dietary modifications, and smoking.

*Ayurveda* proposes *Nasya* (nasal administration of medicated oils) as a primary therapeutic intervention for *Palitya*, alongside specific yoga practices described in classical texts, presenting a potential avenue for safer and more holistic management.

**MATERIALS AND METHOD**

- Collection of raw ingredients was done from *Rakabganj (Yahiyaganj)* market, Lucknow. *Bhringraj* was collected from state ayurvedic pharmacy Lucknow.
- Raw ingredients were recognized and verified by the experts of *Dravyaguna* Department of SAC, Lucknow before exposing them for the processing of *Nimba Beej Taila*.
- *Nimba Beej Taila* manufactured as per classical text and processed in the *Rasashala* attached with PG Department of *Rasa shastra* and *Bhaishajya*

Kalpna, State Ayurvedic College and Hospital,

Lucknow.

Table 1.

S. No.	Name of Practical	Ingredients	Batch
1.	Preparation of <i>Nimba Beej Taila</i>	<ul style="list-style-type: none"> <li>• <i>Nimba Beej</i></li> <li>• <i>Bhringaraj</i></li> <li>• <i>Vijayasar</i></li> </ul>	Batch-I Batch-II Batch-III

### Method of preparation

#### Process for preparation of *Swarasa*

- *Bhringaraj* was taken after removing the foreign matter and crushed with the help of *Khalva yantra*. Extraction of the *Bhringaraj* was done with the help of muslin cloth. *Swarasa* was kept in the stainless-steel vessel.
- According to reference of *Vaidyaka Paribhasa Pradipa*, seven times *Bhavana of Bhringaraj Swarasa* was given in one batch of *Nimba Beej*.

#### Process for preparation of *Kwatha*

- Coarse powder of *Vijayasar* was taken in a steel pan and soaked with eight times the amount of water overnight to facilitate better extraction of active herbal compounds. The next day, the above material was heated/boiled with eight times the amount of water over *Mandagni* (medium temperature) without stirring and without covering its mouth. Water has been evaporated slowly and reduced till the quantity became 1/4th part of its initial quantity. The heating process was stopped at this point and allowed to cool. After that, it was filtered using a double-folded clean cotton cloth to obtain a clear *Kwatha*.
- According to reference of *Vaidyaka Paribhasa Pradipa*, the seven times *Bhavana of Vijayasar Kwatha* was given in one batch of *Nimba Beej*.

#### Process of *Taila Patana*

- A big pot was filled with *Bhavita Nimba Beej* from which oil was to be extracted. The neck of the pot

was covered with iron mesh and later with another receiving pot having similar neck diameter to the first pot. The junction of the neck was carefully sealed with mud smeared cloth and was completely dried. A pit of suitable size was made in the ground, moistened with water, and the set-up of the pots was shifted into the pit, taking care that the pot filled with *Bhavita Nimba Beej* was above the receiving pot. The pot with the *Bhavita Nimba Beej* was above the ground and was covered with cow dung cakes of required amount. Cow dung cakes were to be ignited to burn completely. On self-cooling, oil drawn into the lower pot was collected carefully. The obtained oil was measured and preserved in non-reactive glass container.

### OBSERVATION AND RESULT

In the preparation of *Nimba Beej Taila* by the *Patal Yantra* method, *Bhringaraj Swarasa* was first prepared, followed by the preparation of *Vijayasar Kwatha*, during which continuous *Mandagni* was maintained throughout to ensure uniform heating. The liquid was gently stirred during boiling to facilitate proper alkaloids extraction, resulting a dark brown coloured liquid with specific smell. *Bhavna of Bhringaraj Swarasa* and *Vijayasar Kwatha* was given to *Nimba Beej*. After extraction darkest of brown coloured liquid with characteristic pungent smell was obtained which was carefully collected, measured, and preserved in a non-reactive glass container.

Table 2: Result obtained after *Swarasa* preparation.

Final results obtained	Batch I	Batch II	Batch III	Average
Weight of fresh drugs (in gm)	1230	1230	1230	1230
Final quantity of <i>Swarasa</i> obtained (in ml)	820	800	810	810
Percentage of <i>Swarasa</i> obtained (%)	66.6%	65%	65.8%	65.8%

Table 3: Observation of *Nimba Beej Taila Patana*.

Batch Sr. N.	Wt. of Beej (gm)	Number of dung cakes	Duration of Heat(hrs.)	Peak Temp.	Yield (gm)	%(w/w)
1.	2000	26	3	365c	489	24.4%
2.	2000	26	3	337c	503	25.1%
3.	2000	26	3	353c	517	25.8%

Table 4: Result obtained after *Kwatha* preparation.

Final results obtained	Batch I	Batch II	Batch III	Average
Coarse powder of raw drugs (in gm)	2000	2000	2000	2000
Water (in ml)	16000	16000	16000	16000
Final quantity of <i>Kwatha</i> obtained (in ml)	3980	4000	3992	3990
Percentage of <i>Kwatha</i> obtained (%)	24.8%	25%	24.9%	24.9%

**Table 5: Organoleptic Parameters.**

Sr. N.	Parameter	Nimb Beej Taila
1	Description	Brown colored thick oil
2	Color	Dark-Brown
3	Odor	Characteristic
4	Taste	Bitter
5	Texture	Liquid

**Table 6: Physico-Chemical Parameters of Nimba Beej Taila.**

Sr. N.	Parameter	Batch1	Batch 2	Batch 3	Avg
1	Specific Gravity at 15°C	0.9202	0.9200	0.9203	0.9201
2	Weight per ml at 25°C	0.9386 gm/ml	0.9380 gm/ml	0.9383 gm/ml	0.9383gm/ml
3	Refractive Index at 40°C	1.4768	1.4766	1.4767	1.4766
4	PH Value	7.5	7.7	7.8	7.66
5	Loss on drying at 105°C/Moisture content	0.0136% w/v	0.0136% w/v	0.0136% w/v	0.0136%w/w
6	Iodine Value	69.02	69.01	69.02	69.01
7	Saponification Value	191.07	191.05	191.06	191.06
8	Unsaponifiable matter (% of)	1.05% w/v	1.03% w/v	1.05% w/v	1.04% w/v
9	Acid Value	0.68	0.66	0.67	0.67
10	Peroxide Value	3.93	3.91	3.95	3.93

### Gas Chromatography

GC is indicated for determining the chemical composition and quality control of oils. It helps authenticate oils, detect adulteration, and ensure compliance with pharmacopeial standards.

- 3-Methyl-4-(phenyl-1-tho)-2-prop-2-enyl-2,5-dih – Aromatic compound, may contribute to odor and biological activity.
- Pentanoic acid, 3-methyl-4-oxo- – Fatty acid derivative; contributes to oil's acidity and antimicrobial property.
- Propanoic acid, ethyl ester – Ester compound; imparts fragrance and helps in solubility.
- n-Toluene – Aromatic hydrocarbon; minor constituent.
- Phenol – Known for strong antiseptic and antibacterial properties.
- o-Cresol – Phenolic compound with disinfectant and preservative properties.
- Undecane – Hydrocarbon contributing to viscosity and lubrication.
- Cyclopropane, 1-pentyl-2-propyl- Cyclic hydrocarbon; adds to oil's complex chemical nature.

These components together explain the medicinal, antibacterial, and cosmetic benefits of *Nimba Beej Taila*.

### DISCUSSION

The formulation of *Nimba Beej Taila* as mentioned in *Sharangdhara Samhita (Madhyam Khanda 9/154)* consists of three principal ingredients — *Nimba Beej*, *Bhringraj*, and *Vijaysar*. Each of these components plays a significant role in enhancing the therapeutic efficacy of the formulation.

*Nimba Beej* (seeds of *Azadirachta indica* Linn., Family – Meliaceae) serves as the main ingredient and the base

source of oil (*Taila*). Neem seeds are well known for their *Tikta* (bitter) and *Kashaya* (astringent) properties, as well as their *Kaphapittahara* actions.

The second ingredient, *Bhringraj* (*Eclipta alba* Hassk., Family – Compositae), is incorporated in the form of *Panchang Swarasa* (juice of the whole plant). It contributes rejuvenating and hepatoprotective qualities and supports the skin and hair health benefits of the formulation.

The third ingredient, *Vijaysar* (*Pterocarpus marsupium* Roxb., Family – Leguminosae), is added in the form of *Kandasara Kwatha* (decoction of the heartwood). It is known for its *Kashaya* (astringent) taste and *Kaphapittahara* properties, and is traditionally used for its antidiabetic and wound-healing actions.

The yield of *Nimba Beej Taila* was determined from three samples of neem seeds, each weighing 2000 g. The results are presented in pharmaceutical study which shows the obtained weight and percentage yield of oil for each sample. The oil yield from the first sample (N.B.T-1) was 489 g, corresponding to 24.4%. The second sample (N.B.T-2) yielded 503 g of oil, equivalent to 25.1%, while the third sample (N.B.T-3) provided the highest yield of 517 g, corresponding to 25.8%.

### The possible reason for variation in *Nimba Beej Taila* yield among N.B.T-1, N.B.T-2, and N.B.T-3 could be likely due to

- Differences in peak temperature and heat consistency (oil extraction efficiency is highly temperature-dependent). Very high temperature may lead to thermal degradation of oil or charring of seed material, reducing amount of extractable oil.

- Differences in burning efficiency of cow dung cakes (though each batch used 26 cow dung cakes, factors such as: moisture level, heat consistency during burning and airflow in the pit) can influence the actual effective heat supply, affecting the amount of oil released.
- Minor losses during filtration and collection (small but unavoidable losses can occur during: filtration, decantation and transfer of oil). Even a small amount of loss can affect the percentage yield.

pH of *Nimba Beej Taila* was 7.66. Specific gravity suggests the presence of solutes in a solvent. The specific gravity of the *Nimba Beej Taila* was 0.9201 which is lesser than the specific gravity of water. Refractive index gives the idea about the viscosity and also the density of the substance. The refractive index of the *Nimba Beej Taila* was 1.4766, substance with high refractive index will be having high viscosity. The saponification value of *Nimba Beej Taila* was 191.06 which indicates the amount of KOH required to saponify 2g of *Nimba Beej Taila*, higher saponification value of *Taila* indicates presences of short-chain fatty acids. It suggests that, more the short chain fatty acid more is the rate of absorption, thus leading to the increased efficacy of the *Taila*. The acid value of *Nimba Beej Taila* was 0.67, low acid value indicates less percentage of free fatty acids, less chance of decomposition of *Taila*, thus increasing lifespan and therapeutic value and good cleansing by soap. Peroxide value gives a measure of the extent to

which an oil sample as undergone primary oxidation. Peroxide value of *Nimba Beej Taila* was 3.93 and there was no primary oxidation.

### CONCLUSION

*Sneha Kalpana* is having longer shelf life, extraction of fat soluble as well as water soluble active principle at a time in a single formulation and quick in absorption. *Nimba Beej Taila* mainly used for *Palitya* (early greying). Ingredients of *Nimba Beej Taila*, *Nimba Beej*, *Bhringaraj* and *Vijaysar* are easily available. The standard analytical parameters of *Nimba Beej Taila* is not available in API and AFI. Hence analytical studies conducted on the *Nimba Beej Taila* can be taken as preliminary standards.

### ACKNOWLEDGEMENT

I would like to thank Head of Department Prof. Anjana Dwivedi Department of *Rasashastra and Bhaishajya Kalpana*, State Ayurvedic college and Hospital, Lucknow and Dr. Rajeev Narayan Bilas, Department of *Rasashastra and Bhaishajya Kalpana*, Lalit Hari State P.G. Ayurvedic college and Hospital, Pilibhit and I also thank to Dr. Arvind Katiyar (Government Analyst, drug testing laboratory, State Pharmacy of Ayurveda and Unani Medicines) for his invaluable expertise and mentorship in the analytical testing of raw materials and the final product for this research.

### Preparation of *Nimba Beej Taila*



Bhrinjraja



Kalka



Swarasa



Nimba Beeja soaked in Bhringaraja Swarasa



**Vijaysar**



**Kwatha Nirman**



**Pulverized Vijaysar**



**Kwatha**



**Bhavita Nimba Beej**



**Patal Yantra**



**Puta**



**Extracted Oil**

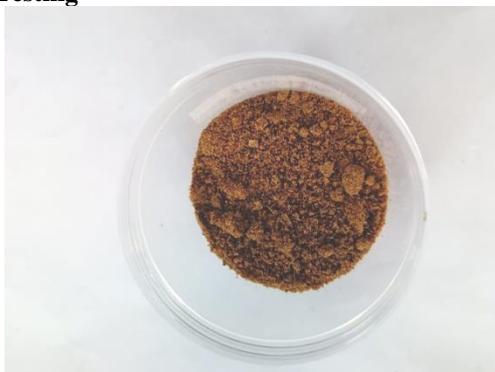


Storage



Packing

Analytical Testing



Powdered Nimba Beej



Powdered Bhringraj



Pulverized Vijaysar



Alcohol Soluble Extractive



Water Soluble Extractive



Water Bath



Ash Value



Acid Insoluble Extractive

### REFERENCE

- Charaka. (2001). *Charaka Samhita* (Trans. P. Sharma). Chaukhambha Orientalia. (Original work written c. 2nd century BCE).
- Sharangadhara. (2002). *Sharangadhara Samhita* (Trans. S. Nishteswar & R. Vidyanath). Chaukhambha Orientalia.
- Vangasena. (2006). *Vangasena Samhita* (Kshudra Rogadhikara). Chaukhambha Sanskrit Series.
- Vrinda Madhava. (2005). *Vrinda Madhava Nighantu* (Kshudra Rogadhikara). Chaukhambha Orientalia.
- Sushruta. (2008). *Sushruta Samhita* (Trans. K. Srikantha Murthy). Chaukhambha Orientalia.
- Ministry of AYUSH. (2020). *The Ayurvedic Pharmacopoeia of India* (Vols. I–VIII). Government of India.
- Sharma, P. V. (1995). *Dravyaguna Vijnana* (Vols. I–III). Chaukhambha Bharati Academy.
- Chakrapani Datta. (2011). *Chakradatta*. Chaukhamba Sanskrit Series.
- Shodhala. (2010). *Gadanigraha*. Chaukhamba Krishnadas Academy.
- Govind Das Sen. (2009). *Bhaishajya Ratnavali*. Chaukhamba Sanskrit Pratishthan.
- KR Srikantha Murthy(translator). Ashtanga Sangraha of Vagbhata, Sutrastana, chapter 29, verse no.2. 3 rd edition, Varanasi; Chaukhambha Orientalia, 2000; 511.
- Bhagavan Dash and R K Sharma(translator), Charaka Samhita of Charaka, Sidhistana, Chapter2, verse no.22. 1 st edition, Varanasi; Chaukhambha Orientalia, 1997; 201.
- Vanitha V, B. Saravanan, K.L. Virupaksha Gupta. Pharmaceutico-Analytical Study of Vishatinduka Taila. International Journal of Ayurveda and Pharma Research, 2022; 10(10): 7-15.
- Ashwini B, Vinayakumar K, Govinda S. Pharmaceutico-Analytical Study of Karaviradya Taila. International Journal of Ayurvedic Medicine, 2022; 13(03): 686-690.
- Tripathi, I. (2015). *Rasashastra and Bhaishajya Kalpana*. Chaukhambha Surbharati Prakashan.
- Joshi, K. S., & Parle, M. Pharmacological evidences for anti-aging effects of Bhringaraj (*Eclipta alba*). *Pharmacologyonline*, 2006; 3: 1–15.
- Chattopadhyay, R. R. Possible biochemical mode of anti-inflammatory action of *Azadirachta indica* A. Juss. *Indian Journal of Experimental Biology*, 1999; 37(4): 318–320.
- prof. K R Srikanta murthy, translator, Vagbhata, Astanga hrudaya, krishnadas academy, Varanasi (vol 3), Uttarasthana.
- Indradeva Tripathi, Chakradatta of Chakrapanidatta with Vaidayaprabha hindi commentary, Chaukhambha Sanskrit sansthan, Varanasi.
- Vaidya Yadavji Trikamji Acharya ed, Ayurveda deepika commentary of Chakrapanidatta, 5th edition 2001, Chaukhambha Sanskrit Sansthan Varanasi.
- Brahmanand Tripathi edited, Ashtanga hridaya Uttara sthana shiroroga vignjaniya adhyaya, chapter 23, chaukhambha Sanskrit sansthan, delhi.