

STANDARDIZATION OF HERBAL AYURVEDIC OIL FORMULATION- NIRGUNDI TAILA

Ankush Mankar*¹, Bhushan Raghuvanshi², Abhijit Gawai³, Premadevi Kalmegh⁴,
Kamalakar Gowardhan⁵

¹Assistant Professor, Department of Panchkarma, Dr. Rajendra Gode Ayurved College,
Hospital & Research Center, Amravati.

²Assistant Professor, Department of Kayachikitsa, Dr. Rajendra Gode Ayurved College,
Hospital & Research Center, Amravati.

³Assistant Professor, Department of AGADTANTRA, Dr. Rajendra Gode Ayurved College,
Hospital & Research Center, Amravati.

⁴Assistant Professor, Department of RSBK, Dr. Rajendra Gode Ayurved College, Hospital &
Research Center, Amravati.

⁵Associate Professor, Department of RSBK, Dr. Rajendra Gode Ayurved College, Hospital &
Research Center, Amravati.

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*Corresponding Author

Ankush Mankar

Assistant Professor,
Department of Panchkarma,
Dr. Rajendra Gode Ayurved
College, Hospital &
Research Center, Amravati.

ABSTRACT

In *Ayurveda*, there is brief description about oils is given because of the specificity of the oils in treatment and secondly there is a useful property in fats- Oil and Ghee (Indian Purified Butter) which allows them to be choice of different purposes. According to *Ayurveda* classics Herbal Oils work on all the three *Doshas*, as qualities of this herbs poured into these oils. These *Ayurvedic* Oils can be taken internally, because of the way these *Ayurveda* Oils are prepared. *Nirgundi Taila* was prepared in-house and was compared with the marketed formulation. The parameters which were determined for the evaluation are acid value, saponification value, Iodine value, Ester value, weight per ml, viscosity and refractive index. The parameters

were found to be similar and hence it was suggested that these parameters could be used for standardization of *Nirgundi Taila*.

KEYWORDS: *Nirgundi*, Acid value, Ester value, etc.

INTRODUCTION

Nirgundi taila is widely used by *Ayurvedic* practitioner for years. This popular oil preparation is a very effective remedy for neurological disorders like facial paralysis, sciatica, hemiplegia, paraplegia, poliomyelitis and even in various anorectal conditions. *Nirgundi taila* is very useful in pacification of *Vata* so *Acharya Charaka* described it in *Vata vyadhi Adhyaya*, the most ancient and classic of *Ayurvedic* medicine.^[1] The ingredients of this preparation are *Nirgundi Swaras & Murchhit Tila taila* (Sesame oil).^[2] This oil is prepared using *Snehapaka kalpana* described in *Ayurvedic* texts and used in various *vata vyadhi* as well as other conditions like skin diseases & hemorrhoids.

MATERIALS AND METHOD

• Collection of Plant materials & Selection of Marketed Formulation

All the ingredients of *Nirgundi Taila* were purchased from the Local market. Each ingredient was carefully checked for the presence of any foreign matter. All the ingredients were reduced to a coarse powder in a mortar pestle. Each ingredient was then passed through Sieve No-85.

• Formulation composition

• Preparation of *Nirgundi Taila*^[2]

- 1) For *Nirgundi taila* firstly we need to make *Til Tail Murchhana*, for this Take all the powdered ingredients (*Manjistha, Haritaki, Bibhitaka, Amalaki, Hrivera, Haridra, Jaladhra, Lodhra, Suchipuspa, Vatankura, Nalika*) of equal quantity. Transfer the powdered ingredients to wet grinder and grind with sufficient quantity of water to prepare *Kalka*. Take *Tila Taila* in a stainless steel vessel and heat it mildly. Add ingredients of *Kalka*. Heat thoroughly while adding water in ratio of 1:4 Starts heating and constantly checks the *Kalka* for formation of *Varti* and observes the boiling mixture for appearance of froth. Stop heating when the *Kalka* forms a *Varti* and the froth emerges. Filter while hot through a muslin cloth and allow cooling.
- 2) Then Take *Nirgundi Swarasa* in equal part as of *Til Taila*. Take equal quantity of *Murchita Taila* in a stainless steel vessel and heat it mildly, Add ingredients – *Nirgundi Swarasa* in equal quantity as *Taila*. Stir thoroughly, while adding *Swarasa*, Heat this mixer with constant stirring maintains the temperature between 50°-90° during the first hour of heating. Stop heating when 1 part remain in vessel and allow standing overnight. Filter while hot through a muslin cloth and allow cooling. Pack it in tightly closed containers to protect from light and moisture.

Evaluation Parameters^{[3][4][5][6]}**• Determination of Acid Value**

The acid value of a fat or oil may be defined as the number of milligrams of KOH required to neutralize the free organic acid present in 1 gm of fat or oil. It is determined by dissolving by weighted quantity of oil and fat in alcohol and titrating against standard alkali, using phenolphthalein as indicator.

$$\text{Acid value} = 5.61 \times a \times N/W$$

• Determination of Saponification value

It may be defined as no of milligram of KOH required to saponify 1gm of fat or oil. It is calculated by refluxing a weighed amount (1-2g) of the fat or oil with known excess of standard alcoholic caustic potash solution and back titrating the excess alkali with a standard acid.

$$\text{Saponification value} = (b-a) \times 0.02804 \times 100/w$$

• Determination of Iodine value

It may be defined as the number of grams of iodine taken up by 100gm of fat or oil. Iodine value of a fat or oil may be regarded as a measure of its degree of unsaturation and gives an idea of its drying character.

$$\text{Iodine value} = (a - b) \times 1.27/w \text{ Where}$$

a = reading for the blank experiment. b = reading for actual experiment.

W = weight of oil taken.

• Refractive Index

Refractive index of a substance with reference to air is the ratio of the sine of the angle of incidence to the sine of the angle of refraction of a beam of light passing from air into substance.

$$\text{Refractive index } \mu = \sin i / \sin r$$

• Determination of weight per ml at 40°

The weight per ml of a liquid is the weight, in a gm of 1ml of a liquid when weighed in air at 25°, unless otherwise specified.

• Determination of viscosity

It is an index of resistance of a liquid to flow, the higher the viscosity of a liquid, the greater

is the resistance to flow.

- **Determination of Ester value**

The Ester value is the no. of milligrams of KOH required saponifying the ester present in 1g of the substance.

$$\text{Ester value} = \text{Saponification value} - \text{Acid value}$$

RESULT AND DISCUSSION

S.No.	Evaluation Parameter	Observation
1	Acid value	11.13
2	Saponification value	148.22
3	Iodine value	121.03
4	wt/ml at 40 ⁰ C	0.932
5	Viscosity	60.85
6	Ester Value	137.09

Acid value is defined as the number of milligrams of potassium hydroxide required to neutralize the free acids present in 1g sample of fat or oil. Acid value is an indication of rancid state. More acid value means more free fatty acid. This free fatty acid interferes in trans-esterification with methanol. Lower the acid value higher the yield / quality of oil. Acid value of *Nirgundi Taila* was found as 11.13. Saponification values are highly significant in the making of soap. It is important that the saponification value is just right too high and the soap might contain too much alkali even though there is sufficient soapiness that it would react with skin whilst a saponification value too small -the fatty acid salts will not be sufficient enough to remove or saponify the fat or oil and less soapiness. Saponification value of *Nirgundi taila* was found as 148.22 Ester value of *Nirgundi Taila* was calculated to be 137.09. The most important application of the iodine value is to determine the amount of unsaturation contained in fatty acids. This unsaturation is in the form of double bonds which react with iodine compounds. The higher the iodine value, the more unsaturated fatty acid bonds are present in a fat, here iodine value obtain is 121.03. Wt/ml at 40⁰C is calculated for effect of temperature over density and its found 0.932. Ester number is an amount of mg KOH required to saponificate esters contained in one gram of fat or oil. The greater the value, the higher ester content in the oil sample. While the acid number indicates the number of mg of KOH used to neutralize the free fatty acids in one gram of oil samples and here it is 137.09.

CONCLUSION

Nirgundi Taila is one of the great Vata and Shoolahara Taila mentioned by Acharya Charaka.

Its method of preparation is given by Chakradatta. With all these classical references, Nirgundi Taila was prepared and subjected for analysis to check and identify standard qualitative parameters. Outcome what get after analysis shows the standard qualitative parameters of Classical Taila Preparation.

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