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PHARMACEUTICO-ANALYTICAL STUDY OF VIBHITAKADI TAILA

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ABSTRACT

Introduction : *Taila Kalpana* (Medicated oil) is one among the *Sneha Kalpana* which is fundamental in both preventive and curative therapeutics of Ayurveda. *Vibhitakadi taila* is one such *taila* mentioned in classics in the context of *Timira* (Refractive errors and Cataract). It is the need of the hour to explore such classical ayurvedic references in a scientific way. Ingredients and method of preparation reveals *Vibhitakadi Taila* as safe, effective and easy to prepare formulation. Hence the present work pharmaceutico-analytical study on *Vibhitakadi Taila* is undertaken. **Aim and Objective :** The main aim of the study is to prepare *Vibhitakadi Taila* as per the classical reference and physico-chemical analysis of the same. **Materials and methods :** *Tila Taila Murchana* was done initially to enhance its qualities as it is further used as a base oil for *Vibhitakadi Taila*. A comprehensive physico-chemical analysis of *Vibhitakadi Taila* was done. **Results :** Specific gravity, Density, Refractive index, Viscosity, Acid value, Iodine value, Saponification value, Peroxide value, Rancidity and Thin Layer Chromatography (TLC) were found to be well within the normal range. **Discussion and Conclusion :** Adverse events and drug interactions can result in serious harm to patients and can also lead to increased healthcare costs. The present study asserts that *Vibhitakadi taila* is safe for therapeutic use which is substantial in the treatment of visual impairment.

Keywords: *Vibhitakadi Taila, Timira,* Physico-chemical analysis.

INTRODUCTION

A *Sneha* or an oleaginous substance forms the essential factor of the physical organism, which contributes directly to its vitality and makes life possible as every being abounds in oleaginous principles [1]. *Sneha* can be qualitatively classified into four types i.e., *Ghrita* (Ghee), *Taila* (Oil), *Vasa* (Muscle fat) and *Majja* (Bone marrow). Although *Ghrita* is considered as the superior among 4 [2], the significance of the other 3 can't be denied. *Taila* is such a perquisite in medical field due to its *Vatahara Guna* which includes analgesia etc., There is a process of enhancing the color, aroma and overall properties of the oil which is termed as *Taila Murchana* and this *Murchita Taila* is used as a base oil along with other medicines to prepare specified formulations. *Vibhitakadi Taila* contains *Triphala*, *Patola*, *Arishta*, *Vasa* and *Adhaki* along with *Murchita Tila Taila* as base oil. The combined effect of the formulation can be computed as *Pittashamaka and Chakshushya* as majority of the ingredients possess the same. The analytical study discloses the chemical composition of the formulation as well as their concentration, which aids in ensuring the drug's safety and accuracy. It is performed utilizing contemporary analytical approaches to investigate and interpret physico-chemical changes that occur during and after pharmaceutical production. *Vibhitakadi Taila* was physico-chemically analyzed in the present study.

MATERIALS AND METHODS :

- Source of data : *Tila Taila Murchana* and *Vibhitakadi Taila Kalpana* were done as per classical reference and the sample was subjected to analytical study. The raw drugs required for the preparation of *Vibhitakadi Taila* were procured from a Standard Ayurvedic Raw Drug Suppliers and authenticated by the department of Dravyaguna, SJGAMC Koppal. All raw drugs were washed and dried to remove the dust and dirt. Then they were pulverized to coarse with 20-40 sieve number.
- Preparation of *Murchita Tila Taila* : [3]

Table – 1 *Ingredients of Taila Murchana*

Sanskrit Name	Botanical Name	Family	Ratio	Quantity
Manjishta	Rubia cordifolia	Rubiaceae	1/16 part	250 gm
Haridra	Curcuma longa	Zingiberaceae	1/64 part	60 gm
Lodhra	Symplocos racemosa	Symplocaceae	1/64 part	60 gm
Musta	Cyperus rotundus	Cyperaceae	1/64 part	60 gm
Nalika	Cinnamomum zeylanicum	Combretaceae	1/64 part	60 gm
Ketaki	Pandanus odorotissimus	Pandanaceae	1/64 part	60 gm
Haritaki	Terminalia chebula	Combretaceae	1/64 part	60 gm
Vibhitaki	Terminalia bellirica	Combretaceae	1/64 part	60 gm
Amalaki	Embilica officinalis	Euphorbiaceae	1/64 part	60 gm
Vataankura	Ficus benghalensis	Moraceae	1/64 part	60 gm
Hribera	Pavonia odorata	Malvaceae	1/64 part	60 gm
Tila Taila	Sesamum indicum	Pedaliaceae	1 part	4 litres
Jala			4 parts	16 litres

Method : The unprocessed *'Tila Taila'* was taken in a clean stainless-steel vessel. The vessel was placed over a mild fire and heated until foam started to appear. Soon the fire was lit off when *Taila* attained *Nisphena-bhava* (foamlessness) and *Shaityabhava* (coldness). The oil was now placed again over a mild fire and 16 litres of water was added to it. Meanwhile the fine powder of *Manjistha* and other *Aushadha Dravya*s (Table-1) were mixed with a little quantity of water to prepare *Kalka* (Fig. 01). This *Kalka* was added to the vessel and boiling was continued with frequent stirring. Boiling (Fig. 02) was continued until *Snehasiddha Laksana* were observed.

- Preparation of *Vibhitakadi Taila* : [4]

Table – 2 *Ingredients of Vibhitakadi Taila*

Contents	Ratio	Quantity
Vibhitaki	*Kalka dravya* 1 part	72 gm
Haritaki		72 gm
Amalaki		72 gm
Patola		72 gm
Arishta		72 gm
Vasa		72 gm
Adhaki		72 gm
Murchita tila taila	*Sneha dravya* 4 parts	2 litres
Jala	*Drava Dravya* 16 parts	8 litres

Method : This *Murchita Taila* was taken with 16 parts of water and the *Kalka* (Fig. 03) of the above-mentioned drugs (Table-2) were added to it. This was subjected to gentle fire with constant stirring. Boiling was again continued till it showed *Snehasiddha Lakshana*. Thus, obtained *Taila* is the *Vibhitakadi Taila* (Fig. 04) which is named after its ingredients.

Fig. 01 *Kalka* for *Tila Taila Murchana*

Fig. 02 *Tila Taila Murchana*

Fig. 03 *Kalka* preparation for *Vibhitakadi taila*

Fig. 04 Preparation for *Vibhitakadi taila*

OBSERAVATIONS :

Table – 3 Organoleptic characteristics of *Vibhitakadi Taila*

Parameter	Observation
Appearance	Oily viscous
Colour	Brownish
Odour	Oily
Touch	Greasy
Clarity	Clear
Taste	Bitter

Table – 4 Physico-chemical parameters of *Vibhitakadi Taila*

Parameters	Results
Specific gravity	0.912gm/cm^3
Density	0.877gm/ml
Refractive index	1.364
Viscosity	27mPa
Acid value	1.11mg
Iodine value	153.2mg
Saponification value	198.2mg
Peroxide value	10.8meq/kg
Rancidity	Negative

Table – 5 TLC of *Vibhitakadi Taila*

Particulars	Solvent Front	Sample	Rf Value
Steroids	7.1	0.6, 2.5	0.08, 0.35
Terpenoids	6.5	0.2, 0.5	0.03, 0.07
Flavonoids	6.4	0.4, 0.7, 1.1, 1.4	0.06, 0.109, 0.17, 0.21
Alkaloids	6.6	3.8	0.57
Phenol	6.8	0.4, 0.7	0.05, 0.102
Tannin	6.8	0.6, 1.1	0.08, 0.16

Fig. 05 Specfic Gravity

Fig. 06 Weight/ml

Fig. 07 Refractive Index

Fig. 08 Viscosity

Fig. 09 Acid Value

Fig. 10 Iodine Value

Fig. 11 Peroxide Value

Fig. 12 Saponification Value

Fig. 13 Rancidity

DISCUSSION

4 litres of *Tila Taila* were subjected to *Murchana* and end product obtained was 3.8 litres. Similarly, 2 litres of *Murchita Tila Taila* were taken for preparation of *Vibhitakadi Taila,* and 1.9 litres was the end product. The mode of usage of *Vibhitakadi Taila* is mentioned as *Nasya* (Nasal instillation). Although *Mridu Pakita Taila* is mentioned as *Nasyayogya* [5], *Madhyama Paka* is also equally beneficial.

Interpretation of values of Physico-chemical parameters (Table-4) are as follows,

Specific gravity – It is the ratio of density of the substance to the density of water. Significance : It signifies the heaviness of fats and oil compared to that of water. *Vibhitakadi Taila* with 0.912gm/cm^3 specific gravity imparts the presence of more saturated compounds and less aromatic compounds. (Fig. 05)

Density – It is mass of solute divided by volume of solution. Significance : Density helps in knowing the lubrication activity of the substance. *Vibhitakadi Taila* with 0.877gm/ml density suggests low density when compared to water, which indicates a better absorption rate. (Fig. 06)

Refractive index – The ratio of the speed of light in a medium relative to its speed in vacuum. Significance **:** Higher the refractive index implies the molecular compactness of the substance. *Vibhitakadi Taila* has a refractive index of 1.364 suggests the high molecular absorption through osmosis. (Fig. 07)

Viscosity – Viscosity is the quantity that describes a fluid's resistance to flow. Significance : A fluid with low viscosity flows easily. *Vibhitakadi Taila* with 27mPa viscosity value signifies that it has a reasonable resistance to flow those results in increased contact duration. (Fig. 08)

Acid value – The acid value is the number of milligrams of potassium hydroxide required to neutralize the free acids in 1gm of the substance. Significance : Higher the acid value higher the deterioration rate. *Vibhitakadi Taila* has an acid value of 1.11mg, indicating its low deterioration. (Fig. 09)

Iodine value – Iodine value is the weight of iodine absorbed by 100gms of a chemical substance. Significance : It determines the amount of unsaturation i.e., higher the iodine value, less stable is the oil and vulnerable to oxidation due to free radical production. *Vibhitakadi Taila* has an iodine value of 153.2mg that suggests its high stability. (Fig. 10)

Saponification value – It is the number of milligrams of potassium hydroxide required to neutralize the fatty acids, resulting from the complete hydrolysis of 1gm of the oil/fat. Significance : It collectively determines the molecular weight and the % concentration of fatty acid component present in oil. *Vibhitakadi Taila* has 198.2mg saponification value which suggests presence of high concentration of saturated fatty acids. (Fig. 11)

Peroxide value : It is the number of milliequivalents of active oxygen that expresses the amount of peroxide contained in 1000gms of the substance. Significance : It is used to measure the extent of rancidity reactions which have occurred during storage. *Vibhitakadi Taila* with 10.8meq/kg peroxide value indicates its ability in maintaining the potency during storage period. (Fig. 12)

Rancidity : Rancidification is a general process of oxidation or hydrolysis of Sneha Kalpana which occurs resulting in the decomposition of fats, oils and other lipids. Significance : Oxidation generates highly reactive molecules in the substance that results in unpleasant and noxious odour. *Vibhitakadi Taila* with negative rancidity suggests that it is fit for therapeutic use. (Fig. 13)

Thin Layer Chromatography (TLC) : Thin-layer chromatography (TLC) is a chromatography technique that separates components in non-volatile mixtures. Significance : It is used to determine chemicals in pharmaceutical products. TLC of *Vibhitakadi Taila* (Fig. 14) showed (Table-5) the presence of 2 variants of Steroids, 2 of Terpenoids, 4 of Flavonoids, 1 of Alkaloids, 2 of Phenol and 2 of Tannin indicating its wide spectrum of action. (Fig. 15, 16 & 17)

Fig. 14 Procedure of TLC

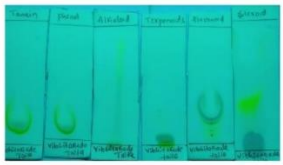

Fig. 15 UV rays at 365nm length (Long)

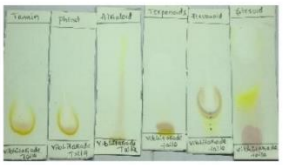

Fig. 16 Visible Light

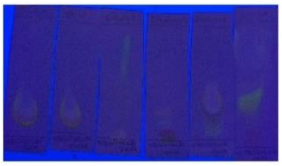

Fig. 17 UV rays at 254nm length (Short)

CONCLUSION

Vibhitakadi Taila is one of many such potential formulations in Ayurveda which can be a boon for mankind if utilised properly after an authentic physico-chemical validation. It is affirmed to quell over one of the prevailing disease *Timira*. Before which the qualitative assessment is very much essential to rule out any possible chemical adverse reactions. The present study showed that *Vibhitakadi Taila* is highly safe for therapeutic usage by a detailed physico-chemical analysis.

REFERENCES

1. Sushruta : Sushruta Samhita with Dalhana's *Nibandha Sangraha* and Gayadas's *Nyaya Chandrika Panjika* Commentary edited by Vaidya Yadavji Trikamji Acharya, Published by Chaukhamba Surabharati Prakashana, Varanasi. Reprint Edition – 2017, *Sharirasthana* – 5/3,4. Page no. 363
2. Vagbhata : Ashtanga Hridaya with Commentaries of Arunadatta's *Sarvanga Sundara* and Hemadri's *Ayurveda Rasayana* edited by Bhishagacharya Pandit Hari Sadashiva Shastri Paradakara. Published by Chaukhamba Surabharati Prakashana, Varanasi. Reprint Edition – 2017, *Sutrasthana* 16/2. Page no. 243.
3. Govinda Dasji Bhishagratna : Bhaishajya Ratnavali with commentary by Vaidya Shri Ambika Datta Shastri, Translated by Dr. Kanjiv Lochan, Edited by Shri Brahmashankar Mishra. Published by Chaukhambha Sanskrit Sansthan, Varansi. Reprint edition – 2016 Volume 1, Chapter 5, *Jwarachikitsa Prakarana*, *Shloka* – 1286, 1287. Page no. 366, 367
4. Vangasena : Vangasena Samhita with *Chikitsasara Sangraha*, Hindi Commentary by Dr. Rajeev Kumar Roy, edited by Dr. Ramkumar Roy. Published by Prachya Prakashana, Varanasi. Edition – 2010, *Netrarogadhikara*, Verse no. 424. Page no. 632.
5. Govinda Dasji Bhishagratna : Bhaishajya Ratnavali with commentary by Vaidya Shri Ambika Datta Shastri, Translated by Dr. Kanjiv Lochan, Edited by Shri Brahmashankar Mishra. Published by Chaukhambha Sanskrit Sansthan, Varansi. Reprint edition – 2016 Volume 1, Chapter 5, *Jwarachikitsa Prakarana*, *Shloka* – 1318. Page no. 374

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