

PHYSICO-CHEMICAL ANALYSIS OF ASANABILWADI TAILA

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Abstract

Background: *Taila* is one of the Ayurvedic drugs that contain *taila* as the base to dissolve or extract or hold the active therapeutic principles from the ingredients. *Asanabilwadi Taila* is a medicated oil formulation, comprises of Asana (*Pterocarpus marsupium*), Bilwa (*Aegle marmelos*), Bala (*Sida cordifolia*), Amruta (*Tinospora cordifolia*), Madhuka (*Glycyrrhiza glabra*), Nagara (*Zingiber officinale*), Haritaki (*Terminalia chebula*), Amalaki (*Emblica officinalis*), Bibhitaka (*Terminalia bellirica*), Ksheera and Tila taila (*Sesamum orientale*) In Sahastrayoga Tailaprakaranam it is mentioned that administration of *Asanabilwadi Taila nasya* i.e., administered in the form of nasal drops cures *Ardhavabhedaka* (Migraine). In this study, an attempt has been made to standardize the physico-chemical parameters for *Asanabilwadi Taila* using modern tools. The aim of this study is to develop the pharmaceutical standards of AT and to establish the analytical parameters of AT.

Materials and Methods: *Taila* is prepared in the GMP-certified KLE Ayurveda Pharmacy, Belgaum, Karnataka, India as per classical method. samples of AT were subjected to the analysis of organoleptic characters and physicochemical parameters such as refractive index, moisture content, acid value, iodine value, saponification value, rancidity value, microbial load, according to the Ayurvedic Pharmacopeia of India, in Ayush-Approved ASU Drug Testing Laboratory, KAHER's Shri B.M. Kankanwadi Ayurveda Mahavidyalaya, Shahapur, Belagavi, Karnataka, India.

Result and Conclusion: Standardization tests done on *Asanabilwadi Taila* are useful in authentication and ensuring the quality of the same.

INTRODUCTION-

Asanabilwadi Taila is a polyherbal formulation of Ayurveda representing the group of *Snehakalpa*. In the present study, the *Asanabilwadi Taila* contained Asana (*Pterocarpus marsupium*), Bilwa (*Aegle marmelos*), Bala (*Sida cordifolia*), Amruta (*Tinospora cordifolia*), Madhuka (*Glycyrrhiza glabra*), Nagara (*Zingiber officinale*), Haritaki (*Terminalia chebula*), Amalaki (*Emblica officinalis*), Bibhitaka (*Terminalia bellirica*), Ksheera and Tila taila (*Sesamum orientale*) In Sahastrayoga Tailaprakarana.

Ekadasha prakarana for the treatment of *Ardhavabhedaka* (Migraine) when administered in the form of *Nasya* (nasal drops) [1]. *Snehakalpana* (medicated taila) is a unique

oleaginous dosage form used both for tropical as well as systemic administration. Quality of the drug is basic need of the era, Analytical tests are helpful to overcome the impurity or substandard of drugs. The standard of quality of any medicine is quite important for the reproducibility of the therapeutic effect. Here in this study *Asanabilwadi Taila* was prepared and Physico-chemical studies like Refractive index, Acid value, Saponification value, Iodine value and moisture content were carried out as per the WHO guidelines, Ayurvedic Pharmacopoeia and Indian Pharmacopoeia [2].

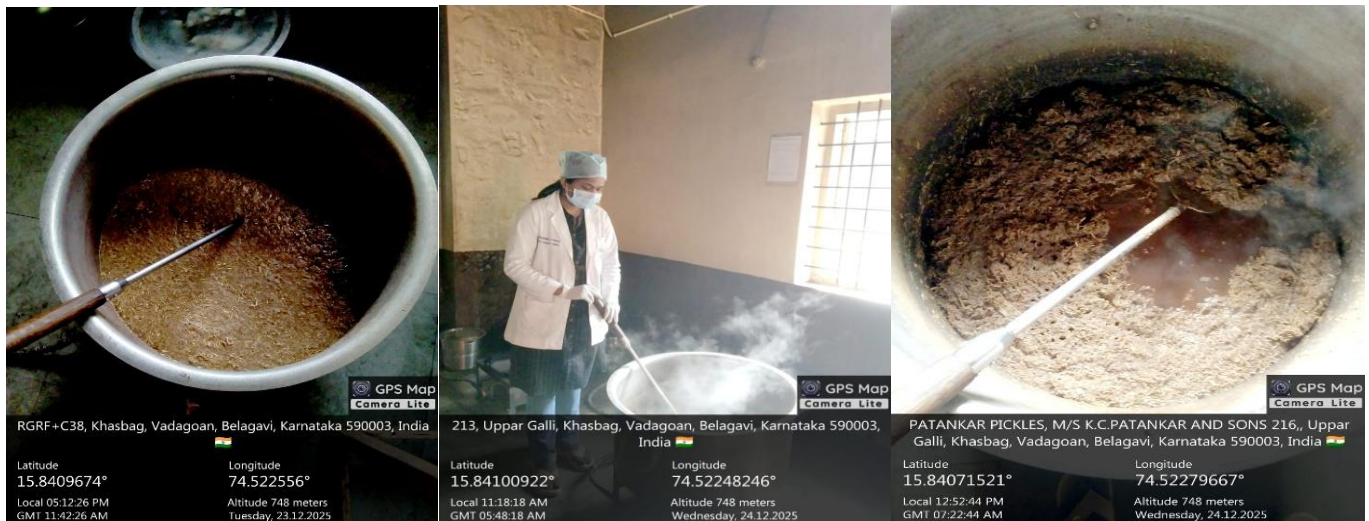
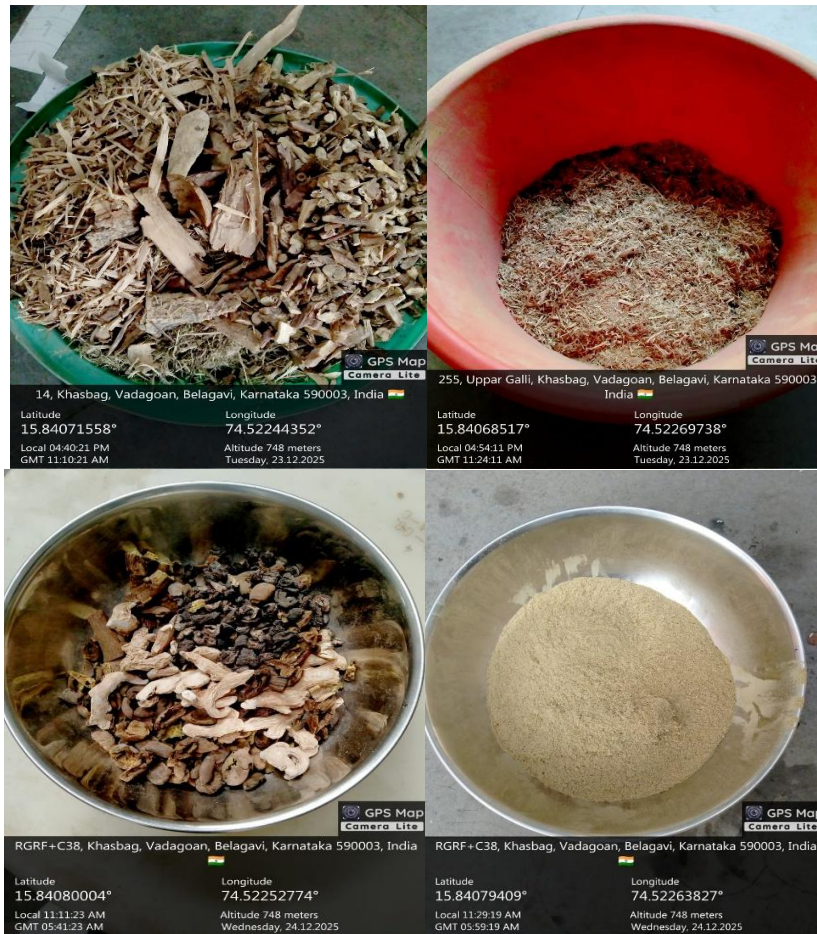
MATERIALS AND METHODS –

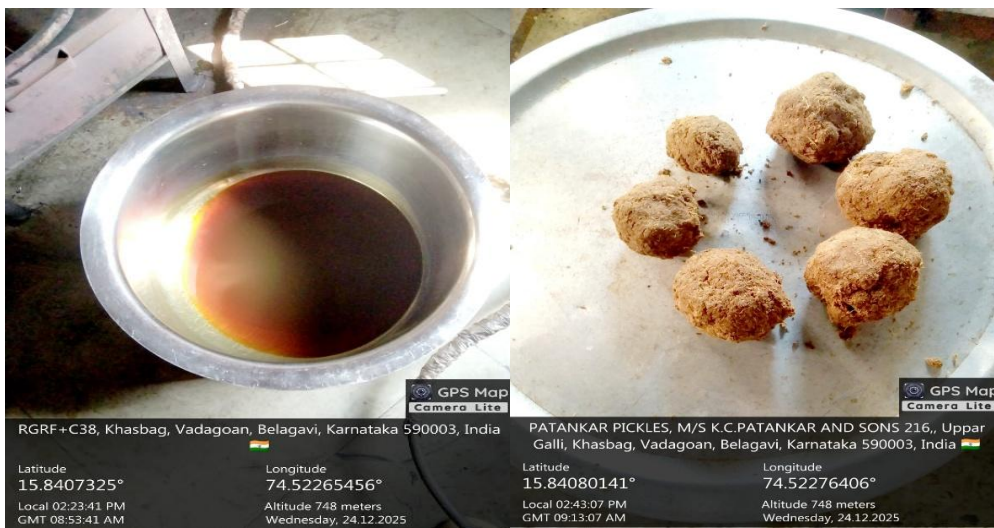
Procurement of drugs –

Asana (*Pterocarpus marsupium*), Bilwa (*Aegle marmelos*), Bala (*Sida cordifolia*), Amruta (*Tinospora cordifolia*), Madhuka (*Glycyrrhiza glabra*), Nagara (*Zingiber officinale*), Haritaki (*Terminalia chebula*), Amalaki (*Emblica officinalis*), Bibhitaka (*Terminalia bellirica*), Ksheera and Tila taila (*Sesamum orientale*) were collected from KLEU's GMP Certified Ayurveda Pharmacy, Khasbag, Belagavi, Karnataka. Authentication of the drug and Quality assessment of the drugs is done at AYUSH approved drug testing laboratory, KLEU's Shri BMK Ayurveda Mahavidyalaya, Belgaum.

Preparation of *Asanabilwadi Taila* -

In the process of preparing *Asanabilwadi Taila* [3], Kashaya was prepared from Asana (*Pterocarpus marsupium*), Bilwa (*Aegle marmelos*), Bala (*Sida cordifolia*) and Amruta (*Tinospora cordifolia*), *kalka* was prepared from Madhuka (*Glycyrrhiza glabra*), Nagara (*Zingiber officinale*), Haritaki (*Terminalia chebula*), Amalaki (*Emblica officinalis*) and Bibhitaka (*Terminalia bellirica*) *Go ksheera* was used as the *drava Dravya* and and *Sneha Dravya* Tila taila (*Sesamum orientale*) were being used for *Sneha murchana*. It was processed by moderate heating (around 110°C), till *Sneha siddhi lakshana*, like *sabdahinoagni -nikshipto*, *vartivat Sneha kalka* and so on, were [4] observed. When the *Sneha siddhi lakshana* appeared then the *Taila* was filtered. *Asanabilwadi Taila* was prepared in KLEU's GMP Certified Ayurveda Pharmacy, Khasbag, Belagavi, Karnataka (**Figure 1-16**).







Observations –

Analytical Study –

To ensure the quality of the prepared Asanabilwadi Taila, the sample was analyzed to obtain parameters such as, organoleptic study, moisture content, acid value, saponification value, iodine value and refractive index, according to the Quality Control Manual of Ayurveda, Siddha and Unani Medicine (the standard protocol mentioned in books) [5]. The test was done as per the standard pharmaceutical laboratory process given in Appendix 3 (Physical test determination) of Pharmacopeia of India [6].

Results –

Sr no.	Drug name	Organoleptic characters	Result	Physico-Chemical analysis	Value
	Bibhitaki	Part	Fruit	Foreign matter	Nil
1.		Colour	Greyish brown	Ash value	2.970%
		Taste	Astringent	Acid insoluble ash	0.9192%
		Odour	Characteristic	Water soluble extractive	37.710%
				Alcohol soluble extractive	22.503%
	Amalaki	Part	Fruit	Foreign matter	Nil
2.		Colour	Grey to black	Ash value	6.389%
		Taste	Sour & Astringent	Acid insoluble ash	0.871%
		Odour	Characteristic	Water soluble extractive	52.812%
				Alcohol soluble extractive	42.641%
	Haritaki	Part	Fruit	Foreign matter	Nil
3.		Colour	Yellowish brown	Ash value	2.601%
		Taste	Astringent	Acid insoluble ash	1.298%
		Odour	Characteristic	Water soluble extractive	64.683%
				Alcohol soluble extractive	48.413%
	Madhuka	Part	Root	Foreign matter	Nil
4.		Colour	Yellowish brown or dark brown	Ash value	4.872%
		Taste	Sweetish	Acid insoluble ash	0.771%
		Odour	Faint & characteristic	Water soluble extractive	28.934%
				Alcohol soluble extractive	13.371%
	Amruta	Part	Stem	Foreign matter	Nil
5.		Colour	Light brown	Ash value	9.323%
		Taste	Bitter	Acid insoluble ash	1.256%
		Odour	characteristic	Water soluble extractive	14.045%

				Alcohol soluble extractive	5.728%
	Bala	Part	Root	Foreign matter	Nil
6.		Colour	Brownish	Ash value	5.662%
		Taste	Not specific	Acid insoluble ash	1.033%
		Odour	Not specific	Water soluble extractive	4.396%
				Alcohol soluble extractive	1.338%
	Asana	Part	Heartwood	Foreign matter	Nil
7.		Colour	Golden yellowish brown	Ash value	1.583%
		Taste	Astringent	Acid insoluble ash	0.346%
		Odour	characteristic	Water soluble extractive	7.401%
				Alcohol soluble extractive	10.044%
	Bilwa	Part	Root	Foreign matter	Nil
8.		Colour	Pale yellowish brown	Ash value	4.613%
		Taste	Sweet	Acid insoluble ash	0.538%
		Odour	Characteristic	Water soluble extractive	10.017%
				Alcohol soluble extractive	10.720%
	Cow milk	Part	Liquid		
9.		Colour	White to slightly yellowish	Specific gravity	1.027
		Taste	Slightly sweet	pH	6.56
		Odour	Characteristic		
				Rancidity	Negative
	Tila Taila	Colour	Light golden	Loss on drying	0.498%
10.		Odour	Pleasant	Acid value	1.872
		Touch	Oily	Iodine value	109.289
				Saponification value	192.526
	Nagara	Part	Rhizome	Foreign matter	Nil
11.		Colour	Buff coloured	Ash value	4.574%
		Taste	Pungent	Acid insoluble ash	1.195%
		Odour	Aromatic	Water soluble extractive	13.272%
				Alcohol soluble extractive	4.655%

	Asanabilwadi Taila	Part	Taila	Moisture content	0.294%
12.		Colour	Brown	Saponification value	183.516
		Odour	Characteristic	Iodine value	107.013
				Refractive index	1.479
				Acid value	0.883
				Viscosity	33.257 x 10-6 cP
				Rancidity	Negative

DISCUSSION –

Organoleptic characters- The organoleptic characters of Asanabilwadi Taila are mentioned in Table 1. Acid value – The acid value indicates the free fatty acid (FFA) present in the Taila, the fatty acid profile affects the shelf-life, flavor, and the stability of the Taila. Formation of free fatty acid might be an important measure of rancidity for the Taila. FFA is formed due to the hydrolysis of triglycerides and may be promoted by the reaction of the Taila with moisture.[7]. The FFA present in the Taila indicates its identity or purity [8]. High amounts of free fatty acid (Acid Value) favor a decrease in the quality of the Taila . This indicates that during the process of Snehapaka, hydrolysis of Taila takes place, which may be promoted by the reaction of the triglycerides in the Taila with the active ingredients present in Asanabilwadi Taila , resulting in glycerol and free fatty acids. This shows that quality (nutritive), stability, and shelf life of Asanabilwadi Taila is of standard quality (Table 2). Saponification value – Low and high saponification values are indicative of Long-chain fatty acids (LCFAs) and short-chain fatty acids (SCFAs) respectively [9]. Short chain fatty acids are readily absorbed; a greater increase in SCFA production and

potentially a greater delivery of SCFAs, specifically butyrate, to the distal colon, may result in a protective effect [10]. Asanabilwadi Taila has a satisfactory saponification value (Table 2), Thus, Asanabilwadi Taila will improve the colonic and systemic health and it is easily absorbed and digested, and plays a protective role. Moisture content- It indicates the presence and percentage of moisture in the substance. Higher value of moisture suggests that taila is more susceptible for getting contaminated. The moisture content in Asanabilwadi Taila sample were within permissible limit, indicating that they were free from contamination (Table 2). Iodine Value- Iodine values determine the unsaturated fatty material present in the Taila . It also improves the nutritional status and reduces systemic inflammation [11]. The higher the iodine number, the more are the unsaturated bonds present in the fat. A high iodine value indicates that the fats are a rich source of polyunsaturated fatty acids that possess health benefits such as regulating blood cholesterol levels [12]. Asanabilwadi Taila has a satisfactory iodine value which be used for quality assessment and standardization of Asanabilwadi Taila (Table 2). Refractive Index - Refractive index is the ratio of the velocity of light in a vacuum to its velocity in the substance.

More the Refractive index, there will be more concentration of light which facilitates rancidification of Taila i.e. decomposition of Taila . The refractive index in Asanabilwadi Taila sample were within permissible limit, indicating that some active substances of Asana ,Bilwa ,Bala , Amruta, Madhuka, Nagara, Haritaki, Amalaki, Bibhitaka, Ksheera and Tila taila dravyas (Table 2).

CONCLUSION-

It is concluded from above analytical parameters that Taila is under normal limits as per standards. Hence, the average values of the analytical parameters may be used for quality assessment and standardization of Asanabilwadi Taila

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