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PHARMACEUTICO-ANALYTICAL STUDY OF BALA TAILA

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ABSTRACT

Introduction: *Bala Taila* is a significant Ayurvedic formulation categorized under *Sneha Kalpana*, a secondary dosage form designed to extract lipid-soluble active plant principles into a fatty medium to increase therapeutic potency. Traditionally, the process involves *Sneha Murchhana* to remove impurities (*ama dosha*) and enhance drug absorption. This study aimed to prepare and analyze *Bala Taila* as described in classical texts like *Bharat Bhaishajya Ratnakar* for treating various *Vata* and *Pitta* disorders. **Materials and Methods:** The pharmaceutical preparation involved two primary stages: *Tila taila Murchhana* using ingredients such as *Manjishta* and *Haridra*, followed by the preparation of *Bala Taila* utilizing *Bala kwatha*, *Godugdha*, and *kalka*. Analytical studies were conducted following CCRAS guidelines to evaluate organoleptic and physico-chemical parameters at the State Drug Testing Laboratory, Kurukshetra. **Results:** Organoleptic evaluation revealed a light yellow liquid oil with a characteristic odor. Physico-chemical analysis recorded a specific gravity of 0.918, an acid value of 1.76, a saponification value of 198, and a refractive index of 1.472. The formulation was free from mineral oil and microbial contamination. **Conclusion:** The results indicate a high-quality formulation with minimal impurities, confirming its pharmaceutical stability and potential clinical effectiveness. These established parameters serve as a baseline for future research and drug development.

KEYWORDS: *Sneha Kalpana, Bala Taila,* Analytical Study.

INTRODUCTION

There are primary and secondary dosage form described in *Ayurvedic* Pharmaceutics. *Sneha Kalpana* is the secondary dosages form with the aim to extract the lipid soluble active principles of plant into *sneha* medium and to increase therapeutic potancy of sneha.[1] The essential ingredients required to prepare the *sneha kalpana* is kalka dravyas, sneha dravya, drava dravyas.

Sneha murchhana is the procedure where the raw sneha(oil/ghee) is boiled with fine powder of selected medicinal drugs and desired quantity of water to get rid of *ama dosha* and bad odour present in it.[2] This process in turn helps in enhancing the potency of same, alter chemical composition of sneha which indirectly helps in extraction of active principles into sneha medium and enhance the appetite of drug absorption in sneha.

Bala taila is the one of most important formulation of Ayurvedic Pharmaceutics described by different Acharyas in different classical texts.

*Bala Tai*l in *Bharat Bhaishajya Ratnakar* and *Gadanigraha* is mentioned for all types of *vata rogas, raktashrit vata, pitashrita vata, yonidosha, talushosha, trisha, daha, parshvshula, raktapitta, shosha, apshmara, visharpa, sirograha and as ayuvarnakar, parjakaram.*[3]

Owing to these, an attempt is made in present study to prepare and analyse the *bala taila*.

MATERIALS AND METHODS

Pharmaceutical Study

The required raw material used to prepare the Bala Taila was procured from local vendors of Kurukshetra. The raw drugs is autheticated from SDTL, Kurukshetra.and preparation of bala tail was carried out as per textual references in SAP, Kurukshetra.[3]

Method of Preparation

Tila taila Murchhna[4]

The ingredients required for *tila taila murchhana* are described in table

1. Prepare the *kalka* of drugs. *Tila taila* is taken in a vessel, heated to *mandagni* then add the prepared *kalka* of drugs and specified quantity of water and heated in *madhyam agni* till *taila sidhhi lakshana* appears. Filter the oil through clean cloth.

Table-1 Ingredients required for *tila taila murchhana.*

S No	Drugs	Quantity
1	**Tila taila**	1 part
2	**Manjishta**	1/16 part
3	**Harad, Baheda, Amla, Musta, Haridra, lodhra, Kevada, Kumari, Netrabala**	1/64 part each
4	**Water**	4 parts

Bala taila Preparation

The ingredients required for the preparation of *Bala Taila* are as per in table 2. *Bala panchang* washed with clean water, dried in sunlight and coarsely powdered with the help of grinder. Prepare the *bala kwatha* by using appropriate quantity of water, reduced it to 1/4. Prepare the *tila* and *bala kalka*. Then *tila taila* was taken in a vessel, heated in *mandagni* then add prepared *kalka*, then *kashaya* and *godugdha* in specified quantity and heated in *madhyam agni* till *taila sidhhi lakshana* appears. Filter the prepared oil through clean cloth and stored in suitable container.

Table-2 Ingredients required to prepare *Bala Taila.*

S No	Drugs	Quantity
1	**Bala**	10.4 parts
2	**Water**	204.8 parts
3	**Murchhita Tila taila**	25.6 parts
4	**Godugdha**	102.4 parts
5	**Bala kalka**	1 part
6	**Tila kalka**	1 part

Analytical Study

This includes organoleptic and physico-chemical parameters of *bala tail* as per the CCRAS guidelines.[5]

1. Description	6. Acid value
2. Colour	7. Refractive index
3. Odour	8. Microbial staining test
4. Saponification value	9. Mineral oil
5. Specific gravity	

These tests was carried out at State Drug Testing Laboratory, Kurukshetra by following the procedures described in General Guidelines for drug development of Ayurvedic Formulations[6] and Laboratory Guide for the Analysis of Ayurveda and Siddha Formulations

by Central Council for Research in Ayurvedic Sciences.[7]

OBSERVATIONS AND RESULTS

The properties of drugs used for preparation of *bala taila* is described in table 3 as per classical texts.[8]

Table-3

S No	Drugs	Botanical Name	Rasa Panchaka	Uses
1	**Bala**	*Sida cordifolia*	Madhura rasa, Snighdha, sheeta guna, sheeta virya, madhura vipaka	Rasayana
2	**Tila tail**	*Sesamum indicum*	Madhura rasa, tikshana, vyavayi, suksham, ushna, sara, vishada, guru	Brihngan, vrishya, balya, shulprashman
3	**Godugdha**		Madhura rasa, guru, snigdha guna, sheeta	Rasayan, hridya, jivaniya
			virya, madhura vipaka	

Properties of Drugs used for *Bala tail* preparation.

The organoleptic characteristics of *bala taila* is mentioned in table 4 and result of physico-chemical parameters for same is mentioned in table 5.

Table-4 Organoleptic parameters of *amurchhita* and *murchhita bala taila.*

S No	Parameters	*Bala Taila*
1	**Description**	Liquid Oil
2	**Colour**	Light Yellow
3	**Odour**	Characteristic

Table-5 Physico-chemical parameters of *amurchhita* and *murchhita bala taila.*

S No	Parameters	Bala Taila
1	**Saponification value**	198
2	**Specific gravity**	0.918
3	**Acid value**	1.76
4	**Refractive index**	1.472
5	**Mineral oil**	Absent
6	**Microbial staining test**	No viable organism /animal body tissue or any insect body part is detected into the sample.

DISCUSSION

Bala Taila is of light yellow colour and characteristic odour with liquid consistency.

The Physico-chemical parameters of *bala taila* are as followings

Specific Gravity (SG) is the Weight of given volume of liquid at a specific temperature divided by weight of an equal volume of water at the same temperature. The changes in Specific Gravity is due to the dissolved material in oil. SG<1 shows less dense than water and float on water while SG>1 shows lots of waste product in it. Specific gravity of *bala tail* is 0.918.

Acid Value- This measures the miligrams of potassium hydroxide (KOH) require to neutralize free fatty acids in 1 gm of substances. Acid value signify the age, freshness, quality of product. Its lower value signifies the better quality. *Bala taila* has 1.76.

Rancidity- High Acid value indicate that tryglycerides (TGs) broken down into free fatty acids (FFA) due to moisture, enzymes or heat leading to rancidity.

Refractive Index (RI) = sin angle of incidence/sin angle of refraction. This is the velocity of light of vaccum/velocity of light in substance. The solutes in media and consistency of media shows the differences in referative index. Higher RI shows specific molecular properties like higher unsaturation or impurities/adultration. *Bala taila* RI is within limit as per RI of medicinal oils.

Saponification Value (SV) is the measures the mg of KOH needed to hydrolyze 1 gm of fat/oil into glycerol and fatty acid salts. Its high value shows more low molecular weight fatty acid which facilitate the production of more lathering and harder soap. *Bala taila* has the 198 saponification value.

Mineral Oil- This is the distillate of petroleum having complex mixture of hydrocarbons-paraffins, naphthenes. Mineral oil is absent in *Bala taila*.

There is no viable organism /animal body tissue or any insect body part is detected into the sample during the **microbial staining tests**.

CONCLUSION

Bala Taila is used in many vata and pitta disorders as mentioned in classical texts. The concept of *sneha murchhana* described by *Aacharyas* in Ancient *Ayurvedic* text is one of the most important step in preparation of *Sneha Kalpana* includes medicated *taila* and *ghrita kalpanas*. From the above study, this can be concluded that prepared *bala taila* is of better quality with less impurities and would be clinically more effective. The above parameters

will also be helpful in further researches.

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