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### Review Article

#### ROLE OF *KṢĪRABALĀ TAILA* IN *VĀTAJA BĀDHIRYA* - AN ANALYTICAL STUDY

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#### ABSTRACT

**Introduction:** A drug can be defined as any substance that when taken into the living organism may modify one or more of its functions. WHO defines a drug as, "Any substance or product that is used or intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient". This definition appears more in compliance with the terms of *Āyurveda*, which aims at the preservation of good health apart from the mitigation of diseases. The analytical parameters such as organoleptic study, physico-chemical analysis, phytochemical profiling and chromatographic evaluation help in authenticating the quality of drugs and eliminate the adulteration issues.

**Materia and Methods:** The drug should be selected in such a way that it affects the pathogenesis of the disease. In this study, an *Āyurvedic* formulation *Kṣīrabalā Taila* has been selected. The analytical parameters such as organoleptic study, physico-chemical analysis, phytochemical profiling and chromatographic evaluation of *Kṣīrabalā Taila* were analysed.

**Discussion:** *Āyurveda* medicines are of natural origin and having minimum side effects. Different poly-herbal formulations are part of day-to-day *Āyurveda* prescription. These are the complex mixtures of more than one herb in a specific amount. Adulteration and substitution of unavailable drugs is a common practice now days.

So addition and deletion of any component, whether intentionally or unintentionally, can result in a reduction of therapeutic value, as well as serious health complications. As a result, it has become necessary to testify the poly-herbal formulations using modern research parameters in order to standardize and evaluate their quality.

**Conclusion:** Phytochemical study of *Kṣīrabalā Taila* shows that it possesses carbohydrates, alkaloids, amino acids, protein, glycosides, steroid and tannins in *Kṣīrabalā Taila*. Lastly, this study is a preliminary assessment of different analytical parameters for *Kṣīrabalā Taila*. There is no data available regarding the analytical study of this formulation. That's why the present study was set as a reference for further researches.

**Key Words:** *Kṣīrabalā Taila, Bādhīrya, Vāta, Kapha, Rasāyana*

## INTRODUCTION

A drug can be defined as any substance that when taken into the living organism may modify one or more of its functions. In *Āyurveda*, the vast and rich treasure of medicine, various drugs with a remarkable description of fascinating plant population is given.

WHO defines a drug as, "Any substance or product that is used or intended to be used to modify or explore physiological systems or pathological states for the benefit of the recipient". This definition appears more in compliance with the terms of *Āyurveda*, which aims at the preservation of good health apart from the mitigation of diseases. The ultimate goal of *Āyurveda* i.e. *Prakritisthāpana*; can be achieved with the help of a proper drug.

## MATERIAL AND METHODS

The *Cikitsā* is basically nothing else but the *Samprāpti Vighatana*. In *Āyurveda*, the therapeutic preparations of the drug are made according to their *Rasa, Guṇa, Vīrya, Vipāka* and *Prabhāva*. In *Samprāpti* or pathogenesis of *Bādhīrya, Vāta* and *Kapha* are two main responsible factors, so the drug should be selected in such a way that it affects the pathogenesis of the disease. In this study, an *Āyurvedic* formulation *Kṣīrabalā Taila* has been selected based on the reference of *Aśtāṅga Hṛidaya* as indicated in *Vātavyādhi Rogādhikāra* and *Vātarakta Cikitsā*.

### Preparations of drug

***Kṣīrabalā Taila***- *Mūrcchana* of the *Tila Taila* was done and subsequently *Yavakuta Cūrṇa* of *Balā* was boiled with four times water and reduced to one-fourth. After that, a *Kalka* was prepared from *Balā Cūrṇa*. Then *Balā Kwātha, Kalka, Tila Taila* and *Kṣīra* (Fourfold of *Tila Taila*) were cooked on *Mandāgni* till *Samyaka Sneha Pāka Lakṣaṇa* were achieved.

**Table No. 1: Ingredients of *Kṣīrabalā Taila***

| S. No. | Drug Name   | Latin Name Scientific Name | Part used        | Quantity       |
|--------|-------------|----------------------------|------------------|----------------|
| 1.     | <i>Balā</i> | <i>Sida cordifolia</i>     | <i>Panchāṅga</i> | Kwāth – 4 part |

|    |                   |   |          |                |
|----|-------------------|---|----------|----------------|
|    |                   |   |          | Kalka – ¼ part |
| 2. | <i>Tila Taila</i> | - | Seed oil | 1 part         |
| 3. | <i>Godugdha</i>   | - | -        | 1 part         |

**Table No. : 2 Pharmacodynamics of *Kṣīrabalā Taila***

| S N | Drug              | Rasa                                | Guṇa                            | Vīrya       | Vipāka         | Dośaghnatā           |
|-----|-------------------|-------------------------------------|---------------------------------|-------------|----------------|----------------------|
| 1   | <i>Balā</i>       | <i>Madhura</i>                      | <i>Laghu, Snigdha, Picchila</i> | <i>Śīta</i> | <i>Madhura</i> | <i>Vāta-Pitta</i> ↓  |
| 2   | <i>Godugdha</i>   | <i>Madhura</i>                      | <i>Guru, Snigdha</i>            | <i>Śīta</i> | <i>Madhura</i> | <i>Vāta –Pitta</i> ↓ |
| 3   | <i>Tila Taila</i> | <i>Madhura, Katu, Tikta, Kaśāya</i> | <i>Guru, Snigdha</i>            | <i>Uṣṇa</i> | <i>Madhura</i> | <i>Vāta</i> ↓        |

- *Kṣīrabalā Taila* formulation is having Dominance of *Madhura Rasa* (100%).
- *Snigdha Guṇa* (100%) was observed.
- *Kṣīrabalā Taila* is found to have dominance of *Śīta Virya* (100%)
- The formulation is having Dominance of *Madhura Vipāka* (100%).
- *Kṣīrabalā Taila* is found to have dominance of *Vātaśāmaka* property (100%).

**BALA**<sup>1,2,3</sup>

**Special Activity-** Seeds are nervine tonic, roots are used for the treatment of neurological disorders, A sitoindoside, isolated from the plant has been reported to exhibit adaptogenic and immunostimulatory activities.

**Internal use-** being neural tonic and *Vātaśāmaka*, it is useful in *Vāta* disorders like paralysis, facial palsy etc.

**TILA**<sup>4,5,6,7</sup>

**Special Activity-** Application of combined extracts of *Emblica officinalis*, *Lawsonia innermis*, *Nardostachys jatamansi* and *Corchorus depressus* prepared in sesame oil diminishes the falling of hair and gave them original color. Sesamolol and sesaminol posses antioxidant activity (ACS Symp. Ser. 1994, 547, 264)

The seed contains thiamine, niacin, riboflavin, nicotinic acid, pantothenic acid, folic acid, biotin, pyridoxine, inositol, choline, *p*-aminobenzoic acid, ascorbic acid, vitamin A, alpha-and beta-tocopherol. Sugars present are glucose, surcose, galactose, planteose, raffinose. Fatty acid in the seed is myristic, palmitic, stearic, arachidic, hexadecenoic, oleic, linoleic and lignoceric.

*Tila* is a brain tonic and is aphrodisiac. Among all the available oils, tila oil is considered to be the best for nourishing all the seven *Dhātus* of the body. Therefore, it is useful as both foods as well as medicine.

### **KŚĪRA (GO-DUGDHA)<sup>8</sup>**

**Special Activity-** The drug is reported to possess one-fifth of the analgesic effect of sodium salicylate. Its aqueous extract has a high phagocytic index.

**Internal Uses-** Useful in weakness and pthisis and good *Rasāyana* for all seven *Dhātus*.

**Table No. 3: Composition of Cow's milk (per 100 ml)**

| Nutrients        | Cow's milk | Nutrients        | Cow's milk |
|------------------|------------|------------------|------------|
| Energy (Kcal)    | 67         | Iron (mg)        | 0.2        |
| Protein (g)      | 3.2        | Vitamin A (mcg)  | 52         |
| Fat (g)          | 4.1        | Thiamine (mcg)   | 50         |
| Carbohydrate (g) | 4.4        | Riboflavin (mcg) | 190        |
| Minerals (g)     | 0.8        | Niacin (mcg)     | 100        |
| Calcium (mg)     | 120        | Vitamin C (mg)   | 02         |
| Phosphorus (mg)  | 90         |                  |            |

### **ANALYTICAL STUDY**

The analytical parameters such as organoleptic study, physico-chemical analysis, phytochemical profiling and chromatographic evaluation help in authenticating the quality of drugs and eliminate the adulteration issues. Therefore, analytical study of *Kṣīrabalā Taila* was undertaken and the following is the explanation of results of various parameters of analytical study:

- **Macroscopic/Organoleptic study**

The organoleptic analysis showed *Kṣīrabalā Taila* had Pale yellow color and a characteristic odour and oily taste, Macroscopic analysis aids in its preliminary quality assessment of drugs.

- **Physicochemical analysis**

It can be used for identifying formulations; routine evaluation at manufacturing sites and provides information for future researches. Physicochemical analysis of *Kṣīrabalā Taila* revealed different parameters like moisture content was 0.46 %, Density was 0.92757 gm/ml, Sp. Gravity was 0.9303, Refractive index was 1.47037, Total fat Content was 78.15%, Iodine value was 67.85, Saponification value was 159.41, Acid value was 1.4%, Peroxide value was 4.215, and Viscosity was 45.04.<sup>9</sup>

- **Phytochemical Analysis**

Phytochemicals are non-nutritive plant chemicals that have protective or disease-preventive properties. In this analysis, extracts prepared from *Kṣīrabalā Taila* was tested for the presence of various active Phyto-compounds as per the Pharmacopoeia of India. Results showed the presence of carbohydrates, alkaloids, amino acids, protein, glycosides, steroid and tannins in *Kṣīrabalā Taila*.

- **Chromatographic study**

Thin layer chromatography (TLC) is a technique that is used to separate and identify the different chemical constituents present in a test solution. Therefore, *Kṣīrabalā Taila* was subjected to chromatographic analysis by the TLC method for assurance of its quality and purity.

- **Mode of action of *Kṣīrabalā Taila***

**Mode of action as per *Rasa***

Maximum drugs in this formulation are having *Madhura Rasa*. Since it is comprised of *Madhura Rasa* hence causes *Śabda-Indriya Prasādana, Sarvadhātu Vardhana, Medhya, Tarpaṇa, Vāta-anulomana* and act as *Vriśya, Āyuśya, Balya, Prīṇana, Jīvanīya, Brinḥaṇa, Sthairayakara Mārutaghna* etc.<sup>10</sup>

*Katu and Tikta Rasa* having *Sphutikaroti-indriyānī, Mārgān Vivranoti,* and *Śleśma Śāmaka* properties.<sup>11</sup> On behalf of these properties, they work on *Karṇendriya* and cleanse the channels and provide strength to the *Nādi Sansthāna*.

**Mode of action as per *Guṇa***

Maximum drugs in this formulation are having *Snigdha* and *Guru Guṇa*. *Snigdha Guṇa* has *Vriśya, Balya* and *Vātahara* properties.<sup>12</sup> *Guru Guṇa* has *Tarpaṇa, Brinḥaṇa, Balya,* and *Vātahara* properties which help in the nourishment and strengthening of neuro vasculatures and improve the disease by *Vātahara* property.<sup>13</sup>

**Mode of action as per *Vīrya***

Due to *Uṣṇa Vīrya, Kapha Doṣa* and *Gati* of *Vāta* gets normalized (*Anulomana*) which provide relief in *Bādhīrya*.<sup>14</sup> Another benefit of *Uṣṇa Vīrya* is that it enhances local as well as general metabolism. Because of this, it causes *Dhātupoṣaṇa Karma* and ultimately enhances *Sarvadhātūs*.

**Mode of action as per *Vipāka***

Maximum contents of *Kṣīrabalā Taila* have *Madhura Vipāka* and according to *Ācāryās, Madhura Vipāka* works same as that of *Madhura Rasa*.<sup>15</sup>

**Mode of action as per *Dośaghnatā***

In terms of *Dośaghnatā*, all the contents of *Kṣīrabalā Taila* possess *Vāta Śāmaka* property, which aids in balancing the *Vāta Doṣa* as well as *Kapha* and thus help in alleviating *Bādhīrya*.

## DISCUSSION

*Āyurveda* medicines are of natural origin and having minimum side effects. Different poly-herbal formulations are part of day-to-day *Āyurveda* prescription. These are the complex mixtures of more than one herb in a specific amount. Adulteration and substitution of unavailable drugs is a common practice now days. So addition and deletion of any component, whether intentionally or unintentionally, can result in a reduction of therapeutic value, as well as serious health complications. As a result, it has become necessary to testify the poly-herbal formulations using modern research parameters in order to standardize and evaluate their quality.

Today due to faulty lifestyle and dietary habits, stress (*Pragyāparādha*), noise pollution, overuse of headphones and earphones (*Asātmendriyārtha Samyoga*), seasonal variation and atmospheric changes (*Parināma*) the number of patients suffering from *Bādhīrya* (SNHL) have been increased.

The *Cikitsā* is basically nothing but the *Samprāpti Vighatana*. In *Āyurveda*, the therapeutic preparations of the drug are made according to their *Rasa*, *Guṇa*, *Vīrya*, *Vipāka*, and *Prabhāva*. In *Samprāpti* or pathogenesis of *Bādhīrya*, *Vāta* and *Kapha* are two main responsible factors, so the drug should be selected in such a way that it affects the pathogenesis of the disease. In this study, *Kṣīrabalā Taila* was selected on the basis of reference of *Aṣṭāṅga Hridaya*.

*Ācārya Susruta* has also mentioned *Vāta-Vyādhivata Cikitsā* in the treatment protocol of *Bādhīrya*. Under the properties of *Kṣīrabalā Taila*, *Acārya* has also mentioned that it nourishes the sense organs, possesses *Jīvaniya* and *Vrunhaṇīya* properties. It is considered as an excellent *Rasāyana*.

The base oil of *Kṣīrabalā Taila* is *Tila Taila* which is considered to be *Śreṣṭha* for the *Snehana* and *Balādhana Karma*<sup>16</sup> hence it further pacifies the *Vāta* and provides strength to the affected *Śabdavahā Nādī*.

*Kṣīrabalā Taila* preparation requires *Kṣīrapāka* process also which further enriches its therapeutic properties, *Kṣīra* also has the properties of nourishing to the tissues and cells. These qualities are enhanced when combined with *Kāṣṭha-Auśadhīs* resulting in an increase of *Rasa-Guṇa-Karma* constituents. It encounters *Vāta Doṣa* due to *Uṣṇa Vīrya* property and also acts as a nerve stimulant.

## CONCLUSION

- *Bādhīrya* can be correlated with the disease of hearing loss or deafness in modern science.
- *Vāta* and *Kapha* are the main *Doṣās* vitiated in *Bādhīrya*.
- The incidence of hearing loss increases with age day by day.
- All ingredients of *Kṣīrabalā Taila* are herbal and *Jāṅgama in nature* and are easily available. Ingredients of *Kṣīrabalā Taila* are having *Vātahara*, *Balya*, *Rasāyana*, *Medhya*, *Brinhaṇa*, *Vriśya*, *Nāḍibalya* etc. properties, which helps in the breakdown of the pathogenesis of *Bādhīrya*. According to modern pharmacology, these drugs possess CNS stimulants, antioxidant, anti-inflammatory, anti stress, and nervine tonic properties.
- *Kṣīrabalā Taila* had Pale yellow color and a characteristic odour and oily taste.
- Physicochemical analysis of *Kṣīrabalā Taila* revealed different parameters like 0.46% moisture content, 0.92757 gm/ml Density, 0.9303Sp. Gravity, 1.47037 Refractive index, 78.15% Total fat Content, 67.85 Iodine values, 159.41 Saponification value, 1.4% Acid value, 4.215 Peroxide value, and Viscosity was 45.04.<sup>17</sup>
- Phytochemical study of *Kṣīrabalā Taila* shows that it possesses carbohydrates, alkaloids, amino acids, protein, glycosides, steroid and tannins in *Kṣīrabalā Taila*.

- Lastly, this study is a preliminary assessment of different analytical parameters for *Kṣīrabalā Taila*. There is no data available regarding the analytical study of this formulation. That's why the present study was set as a reference for further researches.

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