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### New Perspectives of *Ksheerabala Taila* (oil): A Critical Review.

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#### ABSTRACT

*Ksheerabala Taila* is an important *Sneha Kalpana* (oil formulation) mentioned in Ayurveda texts prepared from *Go-Ksheera* (cow milk), *Bala* (*Sida cordifolia*) and *Tila Taila* (sesame oil). Cow's milk contains all the elements necessary for the growth and nutrition of bones, nerves, muscles and other tissues of the human body. *Bala* is a highly valuable drug in Ayurveda and is one amongst the three most utilized raw drugs. It is abundantly mentioned in Ayurveda and has been largely used in neurological as well as heart diseases and reported to possess analgesic, anti-inflammatory as well as hepato-protective activity. *Tila Taila* nourishes and strengthens all *Dhatu*, checks *Dhatukshaya* and thus alleviates *Vata*. The presence of *Go-Ksheera*, *Bala* and *Tila Taila* makes *Ksheerabala Taila* to pacify all the eighty chronic conditions of *Vata* origin (*Vata Nanatamja Vikara*) such as *Ardita* (~facial paralysis), *Katishula* (~low back ache), *Katigraha* (~Gridhrasi, sciatica), *Sandhigata Vata* (~osteoarthritis), *Greeva Hundana* (~cervical spondylosis), cerebral palsy, *Ardhangavata* (~hemiplegia), *Kampavata* (~parkinson's disease), convulsions and other neurological disorders. It is widely used oil in various *Panchakarma* therapies like *Snehana*, *Kavala*, *Talam*, *Matra Basti*, *Nasya*, *Shirobasti* and other methods of *Moordhini Taila*. Different methods of preparation are described in many texts and various studies have been done to compare the efficacy of *Ksheerabala Taila*. Pharmaceutico-Analytical study of *Trividha Sneha Paka* of *Ksheerabala Taila* shows *Madhayama Paka Ksheerabala Taila* having maximum therapeutic value. The present article reviews different studies on *Ksheerabala Taila* with description of various methods of preparations mentioned in Ayurveda texts, its uses in different forms in diseases and probable scientific mode of action.

**Keywords:** *Ksheerabala Taila*; Neurological disorders; Sesame oil; *Sida cordifolia*

#### INTRODUCTION

One of the most popular and important oil formulations in Ayurveda is "*Ksheerabala Taila*" (oil) known for its effectiveness in various diseases such as *Ardita* (~facial paralysis), *Katishula* (~low back ache), *Katigraha* (~gridhrasi, sciatica), *Sandhigata Vata* (~osteoarthritis), *Greeva Hundana* (~cervical spondylosis), cerebral palsy, *Ardhangavata* (~hemiplegia), *Kampavata* (~parkinson's disease), convulsions and other neurological disorders

(including degenerative disorders). The name *Ksheerabala Taila* was first mentioned in *Sahasrayogam* and similar formulations has been mentioned in other classical Ayurveda texts with some different names. In

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*Charaka Samhita*, it is mentioned as *Shata Paka* and *Sahasra Paka Bala Taila*<sup>1</sup>. *Sushruta* mentioned it as *Bala Taila*<sup>2</sup> and *Shata Paka Bala Taila*<sup>2</sup> [*Sushruta Samhita*, *Chikitsasthana*, chapter 15, verse 40-43].

In *Ashtanga Hridaya*<sup>3</sup> and *Bhavaprakasha*<sup>4</sup> it is mentioned as *Shata Paka- Sahasra Paka Bala Taila*. *Chakradutta*<sup>5</sup>, *Vangasena*<sup>6</sup> (mentioned *Dashapaka Bala Taila*, *Shata Paka-Shasra Paka Bala Taila*) and *Gadanigrah*<sup>7</sup> quoted it as *Dashapaka Bala Taila*. National Ayurvedic formulary of India and pharmacopeia standards of Ayurvedic formulations have adopted the formula of *Charaka* and named as *Ksheerabala Taila*. The rationale behind the study is to compile the different methods of preparation of *Ksheerabala Taila* mentioned in Ayurveda classics and to review the uses of *Ksheerabala Taila* as new perspectives in human health.

## METHODS

### METHOD OF PREPARATION OF KSHEERABALA TAILA

It is one of the *Sneha Kalpana* (oil preparation) prepared using *Ksheera* (cow milk), *Bala* (*Sida cordifolia* Linn.) and *Tila Taila* (sesame oil).

### METHOD OF PREPARATION OF KSHEERABALA TAILA AS MENTIONED IN SAHASRAYOGAM<sup>8</sup>

The method of preparation of *Ksheerabala Taila* is mentioned in *Sahasrayogam*, *Taila Adhikara*. Grind 5 *Pala* (240 grams) fresh roots of *Bala* plant and mix it in *Go-Ksheera* (Q.S.) to make *Kalka* (paste). Take this prepared *Bala Moola Kalka* and mix it in *Go-Ksheera* (4 parts or 960 g) and sesame oil (1 *Prastha* or 768 ml). Boil the mixture and then simmer (heat on low flame 70-80°C) the mixture until oil remains. The mixture is then allowed to cool. The prepared mixture is then filtered to obtain the *Ksheerabala Taila*.

### METHOD OF PREPARATION OF SHATAPAKA AND SAHASRAPAKA BAL TAILA IN CHARAKA SAMHITA AND ASTANGA HRIDAYA

Paste is prepared from 960 g of *Bala Moola* powder. Then, a decoction of *Bala Moola* is prepared by taking 61.44 kg water and reduce to 1/4<sup>th</sup> i.e. 15.36 kg. 960 g

sesame oil and 960 g of cow milk is added to the mixture. The mixture is heated on simmer until oil remains and water gets evaporated. The mixture is allowed to cool and filtered to obtain *Ksheerabala Taila*. This process is repeated for 100 times and 1000 times to get *Shata Paka Bala Taila* and *Sahasra Paka Bala Taila* respectively.

### METHOD OF PREPARATION OF BAL TAILA AND SHATPAKA BAL TAILA IN SUSHRUTA SAMHITA

#### i. BAL TAILA<sup>2</sup>

The mixture of *Kwatha* [Table 1], *Tila Taila* and *Kalka* of *Madhura Gana Dravya*, *Kakolayadi Gana Dravya*, *Saindhava Lavana*, *Agaru*, *Raala*, *Dhoop Vriksha*, *Devdaru*, *Manjistha*, *Charila*, *Chandana*, *Kootha*, *Ilaichi*, *Tagara*, *Jatamansi*, *Tejpatra*, *Sariva*, *Vacha*, *Shatavari*, *Punarnava* (taken in equal parts) is heated together to form *Bala Taila* according to *Taila Paka* procedure.

#### ii. SHATAPAKA BAL TAILA<sup>3</sup>

*Tila* is processed (7 times) with *Bala Kwatha* (prepared with equal quantity of *Balamoola* as that of *Tila* mixed with 8 parts of water and 1/8<sup>th</sup> part remains) and oil is extracted from this processed *Tila*. The obtained *Tila Taila* is then processed in *Bala Kwatha* (4 parts) for 100 times. Thus the formed oil is *Shatapaka Bala Taila*.

### METHOD OF PREPARATION OF BAL TAILA AS PER SHARANGADHARA SAMHITA<sup>9</sup>

Ingredients of *Bala Taila* as per *Sharangadhara Samhita* are shown in [Table 2]. The process adopted for the preparation of *Bala Taila* by *Sharangadhara* is same as that of *Sushruta*.

### METHOD OF PREPARATION OF DASHAPAKA BAL TAILA AS PER CHAKRADATTA (Vatarakta Chikitsa, Chapter 23/33-34)

In this method, *Tila Taila* is processed 10 times with *Go-Ksheera* (4 parts) mixed with *Bala Moola Kalka* (1 part) and *Bala Moola Kwatha* (1 part) to form *Dasha Paka Bala Taila*.

**Table 1.** Ingredients of *Bala Taila*

<b>Dravya (Ingredients)</b>	<b>Matra (Quantity)</b>
<i>Bala Moola Kwatha</i> , <i>Dashmoola Kwatha</i> , <i>Kwatha of Ber</i> ( <i>Zizyphus mauritiana</i> ), <i>Jau</i> ( <i>Hordeum vulgare</i> ) and <i>Kulthi</i> (Horse gram, <i>Macrotyloma uniflorum</i> ), <i>Go-Ksheera</i>	8 parts
<i>Tila Taila</i> (sesame oil)	1 part

**Table 2.** Ingredients of *Bala Taila* as Per *Sharangadhara Samhita*.

<b>Dravya (Ingredients)</b>	<b>Matra (Quantity)</b>
<i>Bala Moola Kwatha</i>	8 parts (8 Ser)
<i>Dashamoola Kwatha</i>	8 parts (8 Ser)
<i>Kwatha of Ber</i> ( <i>Zizyphus mauritiana</i> ), <i>Jau</i> ( <i>Hordeum vulgare</i> ) and <i>Kulthi</i> (Horse gram, <i>Macrotyloma uniflorum</i> )	8 parts (8 Ser)
<i>Go-Ksheera</i>	8 parts (8 Ser)
<i>Tila Taila</i>	1 part (1 Ser)
<i>Kalka of Jeevniye Gana Dravya</i> , <i>Kakoli</i> , <i>Ksheerkakoli</i> , <i>Meda-Mahamed</i> , <i>Jeevaka</i> , <i>Rishbhaka</i> , <i>Jivanti</i> , <i>Mulethi</i> , <i>Mugdarni</i> , <i>Masharni</i> , <i>Shatavari</i> , <i>Devdaru</i> , <i>Manjeetha</i> , <i>Kutha</i> , <i>Shailair</i> , <i>Tagara</i> , <i>Agara</i> , <i>Saindhava</i> , <i>Lavana</i> , <i>Vacha</i> , <i>Punarnava</i> , <i>Jatamansi</i> , <i>Anantmoola</i> , <i>Shyamalata</i> , <i>Patraka</i> , <i>Saunf</i> , <i>Ashwagandha</i> and <i>Ilaichi</i> .	Equal part

## RESULTS

From the above studies about *Ksheerabala Taila* it has been found that there are four types of *Ksheerabala Taila* mentioned by different authors by giving different names. All these are mentioned in *Vatarakta Adhikara* except *Sushruta* who mentioned in context of *Moodgarbha Chikitsa*. Regarding their formula and method of preparation there is little difference in above types. The differences [Table 3] are found in;

- (1) Addition of decoction.
- (2) Amount of milk added.
- (3) Number of repetitions of *Paka* (*Avartana*)

The therapeutic utility of *Ksheerabala Taila* can be described on the basis of *Trividha Paka* [*Sharangadhara Samhita*, *Madhyama Khanda*, Chapter 9] (three types of *Sneha Paka*, types of stages in the preparation of *Ghruta* or oil). These three *Paka* namely *Mridu Paka*, *Madhyama Paka* and *Khara Paka* highlights the importance of pharmaceutical aspect of this formulation. Different studies have been conducted on standardization of *Ksheerabala Taila*<sup>10, 11</sup>. Pharmaceutico-Analytical study of *Trividha Sneha Paka* of *Ksheerabala Taila*<sup>12</sup> shows that *Madhyama Paka Ksheerabala Taila* has maximum therapeutic value.

## PROPERTIES OF MAIN INGREDIENTS OF KSHEERABALA TAILA.

### GO-KSHEERA

*Go-Ksheera* (cow milk) contains all the elements necessary for the growth and nutrition of bones, nerves, muscles and other tissues of the human body<sup>11</sup>. It is *Madhura* in taste, *Snigdha*, *Guru Guna* property, *Sheeta Veerya* and *Madhura Vipaka*. It alleviates *Vata Dosha*<sup>3</sup> [*Ashtanga Hridaya*, *Sutrasthana*, chapter 5, verse 21-22]. It is *Jivaniya*, *Brimhaniya*, *Sthanya Vardhaka*, *Balya*, *Snehaniya*, *Dahanashaka*, *Ojovardhaka*, *Vishanasaka*, *Sukrajanaka*, *Agnidepaka*, *Ayurvardhaka*, *Medavardhaka*, *Rasayana*, *Mridu Rechaka*, *Abhisyanda Karaka*.

**Table 3.** Showing the difference between the methods of preparation of *Ksheerabala Taila*.

<i>Ksheerabala Taila</i>	<i>Shatapaka- Sahasra Paka Bala Taila</i>	<i>Bala Taila and Shata Paka Ksheerabala Taila</i>	<i>Dasha Paka Ksheerabala Taila</i>
It is mentioned in <i>Sahasrayogam</i> . Formula contains a single drug for <i>Kalka</i> . Milk is used as <i>Drava Dravya</i> . No <i>Kwatha</i> is mentioned.	It is mentioned in <i>Charaka Samhita</i> , <i>Ashtanga Hridaya</i> , <i>Bhavaprakash</i> as <i>Shata Paka – Sahasra Paka Bala Taila</i> . The preparation contains a single drug for <i>Kwatha</i> (decoction) and <i>Kalka</i> (paste). Milk and decoction are added in equal amounts. If the processing repeated 100 times then <i>Shata Paka Ksheerabala Taila</i> and 1000 times <i>Sahasra Paka Ksheerabala Taila</i> .	It is mentioned in <i>Sushruta Samhita</i> . The recipe contains a single drug for decoction. <i>Kalka Dravya</i> is not mentioned. But <i>Dalhana</i> mentioned the <i>Kalka Dravya</i> .	It is mentioned in <i>Chakradatta</i> , <i>Vangasena</i> , <i>Gadanigraha</i> and <i>Bhavaprakasha</i> . It contains only one drug for <i>Kwatha</i> and <i>Kalka</i> . Amount of milk is added four times to oil. The preparation is repeated for 10 times hence it is called <i>Dasha Paka Bala Taila</i> .

**BALA**

*Bala* is a highly valuable drug in Ayurveda and the fact that it is one amongst the three most utilized raw drugs<sup>13</sup> by Ayurvedic pharmaceuticals. Presently many species of *Sida* are recognized as *Bala* throughout the country. *Sida cordifolia* Linn. is proposed as source plant in Ayurvedic Formulary of India<sup>14</sup>. *Bala*, as the name itself suggests a drug providing energy or strength. It is abundantly mentioned in Ayurveda and has been largely used in neurological as well as heart diseases. *Sida cordifolia* contains alkaloids to extent of 0.085 per cent. The main portion of the alkaloid is identified to be ephedrine<sup>11</sup> by virtue of which it possesses psycho-stimulant properties on CNS<sup>15</sup>. It is kept among *Balya Mahakashaya* <sup>1</sup>[Charaka Samhita, Sutrasthana, chapter 4, verse 7] and *Madhura Skandha* <sup>1</sup>[Charaka Samhita, Vimana Sthana, chapter 8, verse 139] by *Charaka*. *Sushruta* has kept it among *Vatashamaka Gana*, hence it is best for promoting strength and alleviating *Vata*. The root possesses *Madhura Rasa*, *Guru*, *Snigdha Guna*, *Sheeta Veerya* and *Madhura Vipaka*. It is *Balya*, *Rasayana*, *Brimhaniya*, *Oojavardhaka*, *Raktapittahara*, *Vrishya*, *Vatahara*, *Kshayanashaka*, *Prajastapana*, *Grahi*. It is useful in neurological disorders like hemiplegia, facial paralysis, sciatica, general debility, headache, dysuria, leucorrhoea, tuberculosis, diabetes, fever and uterine disorders. *Sida*

*cordifolia* has been reported to possess analgesic, anti-inflammatory as well as hepato-protective activity <sup>16, 17, 18</sup>.

**TILA TAILA (SESAME OIL)**

*Tila Taila* is oil extracted from the seeds of *Sesamum indicum*. Sesame oil contains a crystalline substance sesamin and phenol compound sesamol. Sesame oil is used as a base for oil preparation<sup>11</sup>. *Tila Taila* is *Madhura Rasa* and *Vipaka*, *Balya* and *Rasayana* in *Karma*; it nourishes and strengthens all *Dhatu*, checks *Dhatukshaya* and thus alleviates *Vata*. *Snigdha* and *Guru Guna* decreases *Rukshata* of *Vata* and with the help of *Ushna Guna* and *Veerya* it alleviates *Vata*. *Tila Taila* is *Brimhana/ Lekhana*, *Preenana*, *Vrushya*, *Tvakprasadana*, *Mardavakara*, *Sthairyakara*, *Balya*, *Garbhashaya Shodhaka*, *Bhagna Sandhanakara*, *Medhavardhaka*, *Keshya*, *Shulaprashamana*, *Ropaka*, *Vrana-Nashaka*. It provides lipophilic base to *Nasya* drug which helps in its better absorption as lipid soluble substances have greater affinity through cell membrane of nasal mucosa<sup>19</sup>. It also possesses anti-inflammatory and antioxidant properties<sup>20</sup>. Moreover *Tila* is a good source of Vitamin E (1.4mg/100g) and other ingredients like magnesium, copper, calcium, iron, zinc and Vitamin B<sub>6</sub>, are reported to have beneficial effects in dysmenorrhea<sup>21</sup>.

## DISCUSSION

The probable mode of action of *Ksheerabala Taila* could be analyzed by its *Rasa Panchaka*. All the three ingredients *Bala*, *Ksheera* and *Tila Taila* possess *Madhura Rasa* and *Vipaka*. *Madhura Rasa* mitigates both *Vata* and *Pitta Dosha*. It is *Dhatunaamprabalam* (strength to the tissue) and is good for sense organs and pleasing to mind (*Shadindriyaprasadaka*). It nourishes the body (*Tarpayati*) and plays a major role in promoting life (*Jeevayati*). *Tila Taila* possesses *Tikta Rasa* (bitter taste), the most effective in mitigating *Pitta Dosha* and *Kapha Dosha* in addition to *Madhura Rasa*. *Tikta Rasa* is effective in relieving fainting (*Murchaprasamana*) and promotes memory and intellect (*Medhya*). *Ushna Veerya* (of heating virtue) of *Tila Taila* reduces the *Vata* and *Kapha*. Since it has gone through processing by *Sheeta Veerya* drugs like *Bala* and *Ksheera*, its *Ushnatva* may get altered. *Vata* and *Kapha* are alleviated without agitating *Pitta* which is also *Ushna*. Thus, *Ushna Guna* of *Ksheerabala* acts without having adverse on *Dhatu*. This clears the channels, thereby allowing the action of the properties like *Snigdha*, *Manda*, *Sukshma* and *Vyavayi*. *Ksheerabala Taila* is said to have pacifying effects on all the eighty chronic conditions of *Vata* origin (*Vata Nanatamja Vikara*) such as *Akshepaka* (~convulsions), *Vepathu* (~tremors), *Shrama* (~fatigue), *Glani* (~malaise), *Vishada* (~depression), *Aswapna* (~insomnia) and *Anavasthithachitata* (~behavioral disorders)<sup>4</sup>. *Ksheerabala Taila* is being utilized as a *Rasayana* drug in conventional Ayurveda treatment for epilepsy. The continuous administration of this formulation prevents the release of abrupt electric discharges and improves the physical and mental condition of the patient. It has profound soothing and relaxing effect on mind<sup>22</sup>. Recent research has showed that it reduces the oxidative stress in rat brain and hence proven effect on neurotoxicity<sup>23</sup>. The oxidative stress is the most important mechanism in the development and progression of epilepsy and other diseases including Alzheimer's disease, chronic degenerative disorders, stroke, rheumatoid arthritis, diabetes and cancer. The presence of flavonoids in *Sida cordifolia* has been confirmed by phytochemical analysis and these as well as their glycosides exert anxiolytic, sedative and anticonvulsant effects on the central nervous system<sup>24</sup>. The presence of antioxidants prevents the possible damage of neurons. The anti-inflammatory

activity of *Trividha Paka* of *Ksheerabala Taila* against carrageenan induced acute inflammation and edema was compared to the standard anti-inflammatory drug, Diclofenac. Significant anti-inflammatory activity with late onset was observed in the *Mridu* and *Madhyama Paka* of *Ksheerabala Taila*<sup>25</sup>. The *Nasya* with *Ksheerabala Taila* suppresses nerve inflammation due to its *Sheeta* property and promotes nerve regeneration and gives strength to muscles due to its *Balya* and *Brihmana* properties of drug present in it. It precludes wear and tear of nervous and muscular tissue<sup>26</sup>. Another similar study shows that *Ksheerabala* (101) significantly protects brain cells and reduces the severity of damage caused by alcohol intoxication<sup>27</sup>. *Nasya* with *Ksheerabala Taila* in case of *Sandhigata Vata* with special reference to cervical spondylosis shows highly significant results<sup>28</sup>. *Shirobasti* with *Ksheerabala Taila* along and *Navana Nasya* with *Mahamasha Taila* are found to be effective in the management of *Ardita* (facial paralysis)<sup>29</sup>. *Snehana Karma* with *Ksheerabala Taila* nourishes the *Sleshaka Kapha* stimulate the sensory nerve endings and provide strength to the facial muscles<sup>1</sup> [Charaka Samhita, Sutrasthana, chapter 14, verse 20-24]. *Moordha Taila* with *Ksheerabala Taila* when applied on the head, produces clarity of the sense organs, confers strength to the voice, lower jaw and head. It serves to rejuvenate the body and eliminate mental exhaustion<sup>30</sup>. *Ksheerabala Taila Matra Basti*<sup>31</sup> and *Parisheka Sweda*<sup>32</sup> has a role in the management of *Katigraha* (lumbar spondylosis). *Ksheerabala Taila* is used for the purpose of *Anuvasana Basti*. *Panchatikta Ksheera Basti* and *Anuvasana Basti* with *Ksheerabala Taila* as per *Yog Basti* regime are found significant in case of *Greeva Hundana* (cervical spondylosis)<sup>33</sup>. *Ksheerabala Taila Basti* is one among the treatment protocol in the management of childhood *Karshya* (undernutrition)<sup>34</sup>. *Ksheerabala Taila Matra Basti* has effect in children with cerebral palsy<sup>35</sup>. *Talam* with *Ksheerabala Taila* is one of the complementary treatment protocols for Diabetic Retinopathy<sup>36</sup>. *Kavala* (gargling) with *Ksheerabala Taila* (10-15 ml) along with other therapies is found effective in the management of Oral Submucous Fibrosis<sup>37</sup> (OSMF). *Virechana* (therapeutic purgative), *Tarpana* (ocular therapy used to treat eye disorders) and *Nasya* (errhine therapy with *Ksheerabala Taila*) can be adopted as a line of treatment for Stargardt's Disease<sup>38</sup>. *Ksheerabala Taila Matra Masti*



helps to prevent recurrence of dysmenorrhea<sup>39</sup>. *Shirobasti* and *Nasya* with *Ksheerabala Taila* show improvement in patients of *Kampavata* (parkinson's disease)<sup>40, 41</sup>.

## CONCLUSIONS

Different methods of preparation are described in many texts and numerous studies have been conducted regarding the clinical efficacy of *Ksheerabala Taila*. Pharmaceutico-Analytical study of *Trividha Sneha Paka* of *Ksheerabala Taila* shows *Madhayama Paka Ksheerabala Taila* having maximum therapeutic efficacy. The presence of *Go-Ksheera*, *Bala* and *Tila Taila* makes *Ksheerabala Taila* to pacify all the eighty chronic conditions of *Vata* origin. It is widely used oil in various *Panchakarma* therapies like *Snehana*, *Kavala*, *Talam*, *Matra Basti*, *Nasya*, *Shirobasti* and other methods of *Moordhini Taila*. *Ksheerabala Taila* is an important oil formulation and there is a need to conduct more scientific studies on *Ksheerabala Taila* in order to prove its efficacy on various neurological disorders.

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