



## Review Article

www.ijrap.net

(ISSN Online:2229-3566, ISSN Print:2277-4343)



### A CRITICAL REVIEW OF *ASHWAGANDHADI LEHA* ON MALNUTRITION IN CHILDREN

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Received on: 16/02/23 Accepted on: 24/03/23

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DOI: 10.7897/2277-4343.140253

#### ABSTRACT

Malnutrition is characterized by deficiencies, excesses, or imbalances in a person's nutrient or calorie consumption. Children in developing countries like India continue to struggle with this serious and challenging public health problem. According to India's most recent National Family Health Survey (NFHS-5), 36% of infants under five have stunted growth (too short for their age). This is an indication of ongoing malnutrition. 32% of children under five are underweight, which is a symptom of severe undernutrition, while 19 percent of children under five are wasted (too small for their height). Malnutrition can be correlated with *Karshya* in Ayurveda, and it can be managed with a preparation of *Ashwagandha* called "*Ashwagandhadi Leha*." This drug is made up of the following ingredients: *Ashwagandha* (*Withania somnifera*), *Tila* (*Sesamum indicum*), *Mash* (*Vigna mungo*), *Guda* (Jaggery), *Pippali* (*Piper longum*), and *Ghritha* (Cow ghee). Emphasizing "*Ashwagandhadi Leha*'s" efficacy in treating malnourished children is the main purpose of the current review. The ingredients of this drug have *Deepana* (increase digestive fire), *Balya* (Provide strength), *Brinhana* (provide nourishment), and *Rasayana* (rejuvenator) properties. The clinical evidence shows that these health promoters enhance bioavailability and have excellent nutritional properties. The present paper reveals that this drug is better for gaining weight in malnourished children.

**Keywords:** Malnutrition, NFHS-5, *Karshya*, *Ashwagandha*, *Tila*, *Mash*, *Guda*, *Pippali*, and *Ghritha*

#### INTRODUCTION

Despite implementing many nutritional programs to address it, malnutrition remains a serious and challenging public health issue among children in developing nations like India. According to the global scenario, malnutrition affects 161 million children under the age of five worldwide, and it is getting worse in India, a developing nation with a large population.<sup>1</sup> According to the most recent National Family Health Survey (NFHS-5), 36% of Indian children under five have stunted (too short for their age) growth. This is a symptom of ongoing malnutrition. Undernutrition is evident in children under five when 19% are underdeveloped (too small for their height) and underweight (below the recommended weight) 32%. The percentage of overweight children is 3%. Since 2015–16, malnutrition and being underweight have become less common. Stunting's percentage dropped from 38% in 2015–16 to 36% in 2019–21. The frequency of wasting has decreased over the same time frame, falling from 21% in 2015–16 to 19% in 2019–21.<sup>2</sup> Malnutrition is the most significant single contributor to diseases in the world and leads to 45% of all deaths in children under 5 in developing countries. Due to interrelated mother-child nutrition, if a breastfeeding mother gets the required nutrition, her kid becomes healthy. Deficiencies, excesses, or imbalances in a person's nutrient or energy consumption are called malnutrition. It refers to two major categories of diseases. One is overweight, obesity, and diet-related non-communicable diseases (such as heart disease, stroke, diabetes, and cancer)<sup>3</sup> and another is undernutrition resulting from insufficient nutrient intake,

inadequate absorption, or excessive nutrient loss (a lack of essential vitamins and minerals).<sup>4</sup> According to the 2019 report, India is placed 102nd out of 119 countries.<sup>5</sup> According to the National Family Health Survey 4 (NFHS 4) in India, 35.7 percent of under-five children were underweight (low weight for age), 38.4 percent were stunted (low height for age), and 21% were wasting (low weight for height).<sup>6</sup> The prevalence of undernutrition has not decreased as expected during National Family Health Surveys 1 and 4. According to the Comprehensive National Nutrition Survey (2016–2018), 35% of Indian children aged 0–4 years are stunted, 17% are wasting, and 33% are underweight.<sup>7</sup> Growth and development are the physiological processes that occur when all the factors influencing them are healthy. When these components are weak, failure to thrive (FTT) or small for age happens, and in *Ayurveda*, this is referred to as *Karshya*. *Ayurveda* drugs are powerful in maintaining health and acting against nutritionally induced acute and chronic diseases, promoting optimal health, longevity, and quality of life.

**Therapeutic uses of *Ashwagandhadi Leha*:** A formulation of *Ashwagandha*, known as "*Ashwagandhadi Leha*", is described in *Sahasrayogam Leha Prakarana*. The ingredients of "*Ashwagandhadi Leha*" are *Ashwagandha* (*Withania somnifera*), *Tila* (*Sesamum indicum*), *Mash* (*Vigna mungo*), *Guda* (Jaggery), *Pippali* (*Piper longum*), and *Ghritha* (Cow ghee). Children will gain weight like elephants if it is used for fifteen days.<sup>8</sup> The purpose of the present review is to emphasize the effectiveness of *Ashwagandhadi Leha* in malnutrition in children.

## DISCUSSION

As a result of people's propensity for inactivity and sedentary lifestyles, which encourage the emergence of numerous diseases, drug creation is given top priority today. Despite the tremendous effort put into drug discovery, pharmacotherapy knowledge and drug invention capacity still have a significant knowledge gap. As a result, we continue to rely heavily on traditional therapeutic methods and traditional information. The human species used herbal sources of therapy once for every conceivable disease before modern medications and contemporary techniques were developed. The present study's focus is on health issues connected

to Malnutrition. Both undernutrition and overnutrition are included in malnutrition. However, malnutrition and protein energy malnutrition (PEM) are sometimes synonyms for undernutrition.<sup>9</sup> Undernutrition is a state in which insufficient amounts of nutrients are consumed, poorly absorbed, or excessive amounts are lost. According to Ayurveda, there are eight horrible people (*Ashtau-Ninditiya Purusha*)<sup>10</sup>, whose management is believed to be tough, who are both overly slim (*Atikrusha*) and extremely obese (*Atisthula*) due to malnutrition. According to *Ayurveda*, there is an *Ayurveda* preparation, "*Ashwagandhadi Leha*", for gaining weight during malnutrition. It is used for fifteen days; children will gain weight.

**Table 1: Ingredients and their parts used in *Ashwagandhadi Leha***

Name of drugs	Botanical Name	Family	Part used
<i>Ashwagandha</i>	<i>Withania somnifera</i>	Solanaceae	Dried mature roots
<i>Tila</i>	<i>Sesamum indicum</i>	Pedaliaceae	Seeds
<i>Mash</i>	<i>Vigna mungo</i>	Fabaceae	Seeds
<i>Pippali</i>	<i>Piper longum</i>	Piperaceae	Fruit
<i>Guda</i> (Jaggery)			
<i>Ghrita</i> (Cow ghee)			

### Evidence: Clinical and Experimental

#### *Ashwagandha* (*Withania somnifera*)

The pharmacological effects of the roots of *Ashwagandha* (*Withania somnifera*) are attributed to the presence of withanolides, a group of steroidal lactones. *Withania somnifera* has pharmacological value as an adaptogen, antibiotic, aphrodisiac, astringent, anti-inflammatory, diuretic, narcotic, sedative, and tonic. Studies showed the herb increased the levels of three natural antioxidants: superoxide dismutase, catalase, and glutathione peroxidase.<sup>11</sup> Withanolides, steroidal lactones, phenolics, and flavonoids present in the root of *Ashwagandha* are active chemical markers and act as health promoters.<sup>12</sup>

*Ashwagandha* (*Withania somnifera*) is known to have improved the physical performance and strength parameters in a study. It helps delay the onset of fatigue, thus increasing the time for exhaustion and maintaining the power for a relatively long period. *Withania somnifera* may therefore be helpful for generalized weakness and to improve speed and lower limb muscular strength and neuro-muscular coordination.<sup>13</sup>

#### *Tila* (*Sesamum indicum*)

##### Excellent Nutritional Value

Sesame seeds are especially high in copper, manganese, calcium, and magnesium. Black sesame seeds are rich in B vitamins and iron. It is also rich in calcium and zinc. These minerals help to support healthy bones, muscles, blood, and the nervous system.<sup>14</sup> Its internal use is excellent for improving iron levels, controlling cholesterol, managing heart diseases, and improving strength. The mineral content in this oil is high (Copper, calcium, zinc, iron). Bone health is enhanced by calcium and zinc. Arthritis and gout are both helped by copper. Magnesium promotes the health of the circulatory and respiratory systems. The ratio of good to toxic cholesterol is increased. Purgative effects of sesame oil. It alleviates diarrhoea. Alkaloids, saponins, flavonoids, tannins, phenols, and minerals are present, which is why these beneficial impacts on health exist. The presence of terpenoids gives antibacterial and anti-diabetic effects. Blood sugar and blood pressure are two other conditions that terpenoids can assist with. Central nervous system enhancers include alkaloids. Flavonoids and phenols give them antioxidant properties, and saponins are antioxidant, anti-cancer, and immunity boosters. Tannin present in oil makes it antibacterial, antiviral, and astringent. Sesame oil also contains minerals, viz. zinc, iron, potassium, sodium, copper,

lead and manganese. The concentration of iron is the highest among the various mineral present in the oil.<sup>15</sup>

#### *Mash* (*Vigna mungo*)

##### High Nutritional Value

*Vigna radiata* (mung bean) and *Vigna mungo* (mash bean) of the family Fabaceae are among the staple food in Pakistan. The experiments were conducted on these beans to determine the proximate composition, such as moisture, ash, fibre, fat, and protein content. They have high protein content and play a significant role in human nutrition. These beans have high nitrogen solubility and less fat content, a characteristic generally needed for healthy food. This research concluded that *V. radiata* has a high percentage of moisture ( $9.74 \pm 0.19$ ), fat ( $1.35 \pm 0.048$ ), and protein content ( $22.5 \pm 0.24$ ) as compared to *V. mungo* ( $7.9 \pm 0.06$ ,  $1.01 \pm 0.01$ ,  $21.3 \pm 0.24$ , respectively).<sup>54</sup> and 33% of protein isolates were made from *V. radiata* and *V. mungo*. The functional properties analysis enhances their acceptability in the food industry.<sup>16</sup>

The nutritional value of *Mash* (*Vigna mungo*) in raw and cooked forms and how it is affected by adding various types of meat, such as poultry, mutton, and beef, at levels of 10, 15, and 20%. Chemical analysis and rat testing were used to evaluate the nutritional content of all diets comprising *mash*, whether they were supplemented or not. In the *mash*, the protein made up 23.83%. Nutrients were only slightly altered by cooking. Lysine content in the *mash* was 1.79%, but it decreased by 35% during cooking. Cooking caused declines in all other amino acids as well. A raw *Mash*-containing diet's protein efficiency ratio (PER) was 1.9%, but cooking increased it to 2.8%. Another substantial improvement was seen in true digestibility (TD). The PER was not noticeably improved over the Sun-supplemented diet consisting of cooked *mash* alone by adding various types of meat to the *mash*. But TD increased from 74.89% in prepared food to 75.58-87.06% in diets with supplements. Like the increase in net protein utilization (NPU), cooked beef increased NPU from 43.54% to 42.88%-51.96%. In diets having *mash* and supplemented with 20% level of various types of meat, higher PER, TD, and NPU values were seen.<sup>17</sup>

#### *Pippali* (*Piper longum*)

Piperine was found to enhance the bioavailability of structurally and therapeutically diverse drugs, possibly by modulating membrane dynamics due to its easy partitioning and increase in

permeability of other drugs such as vasicine, indomethacin, diclofenac sodium, etc.<sup>18,19</sup> It has been proposed that piperine may change membrane dynamics and permeation properties, as well as induce the synthesis of proteins involved in cytoskeletal function, increasing the absorptive surface of the small intestine and facilitating effective permeation through the epithelial barrier.<sup>20,21</sup> The research demonstrated that piperine has no negative impacts while increasing the serum concentration, extent of absorption, and bioavailability of curcumin in both rats and people.<sup>22</sup>

### Guda (Jaggery)

Jaggery is much more complex than sugar, which causes it to be digested more slowly. Because of this, it releases energy more gradually than sugar, allowing the body to benefit from the longer-lasting energy. Jaggery has long been used as a standard treatment for anaemia since it is made in iron vessels, making it rich in ferrous salts (iron). Mineral salts that benefit the body are also present in trace amounts.

Guda contains significant amounts of essential minerals that the human body needs, including potassium (1056 mg), calcium (40–

100 mg), magnesium (70–90 mg), phosphorus (20–90 mg), sodium (19–30 mg), iron (10–13 mg), manganese (0.2–0.5 mg), zinc (0.1–0.9 mg), copper (0.1–0.9 mg), chloride (5.3 mg), and vitamins (3.8 mg of vitamin A, 6.50 mg of vitamin D2, 7.50 mg of vitamin C, 111.30 mg of vitamin E). According to reports, the micronutrients in jaggery contribute more to its antitoxic and anticarcinogenic qualities.<sup>23</sup>

### Ghrita (Cow ghee)

The presence of Cow's ghee makes medicines more potent and helps in better absorbability. Medication, along with *Goghrita*, reaches the minutest pores of the body and lubricates them.<sup>24</sup>

### Helps in digestion

The short-chain fatty acid butyric acid, which gives *goghrita* its distinctive flavour and aids digestion, is present. The source of energy and support for the intestinal wall is the helpful microorganisms in the intestine that turn fibres into butyric acid. It has been demonstrated through studies that butyric acid is not produced by digestive systems that are unhealthy. Researchers have hypothesized that the creation of butyric acid, which results in a robust immune system, provides ample support for the gut's generation of killer T cells.<sup>25</sup>

Table 2: Pharmacological properties of the contents of *Ashwagandhadi Leha* as per *Ayurveda*

Drug Name	Rasa	Guna	Virya	Vipaka	Doshaghata	Karma	Therapeutic uses
<i>Ashwagandha</i> <sup>26</sup> ( <i>Withania somnifera</i> )	Tikta, Kasaya	Laghu, Snigdha	Ushna	Madhur	Vata-Kapha Samaka	Deepana (increase digestive fire), <i>Anulomana</i> (regulation), <i>Balya</i> (provide strength), <i>Brinhana</i> (provide nourishment), <i>Rasayana</i> (rejuvenator)	Health Promoter <sup>13</sup> , Immune-Stimulatory Activities <sup>27</sup> , Enhancing Memory and Cognitive Function <sup>28</sup> , Anti-stress activity <sup>29</sup>
<i>Tila</i> <sup>30</sup> ( <i>Sesamum indicum</i> )	Katu, Tikta, Kashaya, Madhur	Snigdha, Sukshma Vyavayi	Ushna	Katu	Kaphakopaka, Vataghna,	<i>Balya</i> (provide strength), <i>Rasayana</i> (rejuvenator), <i>Sangrahi</i> , <i>Agnivardhaka</i> (increase digestive fire)	Excellent Nutritional Value <sup>31</sup>
<i>Mash</i> <sup>32</sup> ( <i>Vigna mungo</i> )	Madhura	Guru, Snigdha	Ushna	Madhura	Kaphavardhaka Pittakaraka, Vatashamaka	<i>Balya</i> (provide strength), <i>Brinhana</i> (provide nourishment), <i>Aruchi</i> (anorexia),	High Nutritional Value <sup>17</sup>
<i>Pippali</i> <sup>33</sup> ( <i>Piper longum</i> )	Katu	Ushna, Snigdha Laghu	Ushna	Madhura	Kaphahara Vatahara	<i>Deepana</i> <sup>34</sup> (increases digestive fire), <i>Hridaya</i> <sup>36</sup> (heart disease)	Enhance the bioavailability <sup>20,35</sup>
<i>Guda</i> <sup>36</sup> ( <i>Jeggery</i> )	Madhura	Snigdha	Natish eeta	-	Vataghna, Kaphakara	<i>Balya</i> (provide strength), <i>Meda vardhaka</i> (Enhances the intellectual power)	Containing enough micronutrients useful for the human body <sup>37</sup>
<i>Goghrita</i> <sup>38</sup>	Madhura	Guru, Snigdha, Saumya, Mridu	Sheeta	Madhura	Vata-Pitta shamak, kaphavridhikar	<i>Deepana</i> (increases digestive fire), <i>Ojavridhikar</i> (immuno-modulator), <i>Balya</i> (provides strength), <i>Medhya</i> (brain tonic), <i>Vayasthapan</i> (delays ageing), <i>Chakshushaya</i> (useful for eyes disorders) <sup>39</sup> .	Helps in digestion <sup>25</sup>

## CONCLUSION

Malnutrition has affected the growth and development of children with a wide range of impacts on physiological function. The present paper reveals that “*Ashwagandhadi Leha*” containing *Ashwagandha* (*Withania somnifera*), *Tila* (*Sesamum indicum*), *Mash* (*Vigna mungo*), *Guda* (Jaggery), *Pippali* (*Piper longum*), and *Ghrita* (Cow ghee) is beneficial for weight gain in malnourished children. Children can easily take the drug in “*leha*” form. *Balya* (strengthening) and *Brumhaniya* (nourishing) drugs potentiate and improve the body's physiological functions.

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**Cite this article as:**

Kishan Gopal Choudhary, Nitu Sinha and Nisha Kumari Ojha. A critical review of Ashwagandhadi leha on malnutrition in children. *Int. J. Res. Ayurveda Pharm.* 2023;14(2):118-122  
DOI: <http://dx.doi.org/10.7897/2277-4343.140253>

Source of support: Nil, Conflict of interest: None Declared

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