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Preparation of Ashwagandha (*Withania Somnifera* (L.) Dunal) ghee – A practical approach inspired by traditional knowledge

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Abstract

The use of ghee in suitable conditions with appropriate doses of desired preparations will render various benefits due to its potency to nullify toxins and toxic effects of drugs; and its capability to act as a media to dissolve and enhance the efficacy of the active principles in the drugs used. The Ayurvedic classics have mentioned Rasayana which is described as an herbal or metallic preparation that are health tonics to children, medicines to middle aged and rejuvenators to the elderly. Ashwagandha is used as Rasayana since the ancient time especially for children in the management of malnourishment. This paper details the practical approach in preparing Ashwagandha ghrita by incorporating the traditional knowledge along with the modern technology in drug manufacture.

Keywords: Ashwagandha, *Withania Somnifera* (L.) Dunal, ghee, Rasayana, traditional knowledge.

1. Introduction

Ghee, referred to as Ghrita in Ayurvedic science, is described as the best among lipids due to its quality of inheriting and enhancing potency of the drug it is enriched with. This property of ghee is deployed to use ghee as medicine where the lipids or fat property along with fat soluble chemical constituents of a particular drug are to be extracted for treatment [1-2]. It is used as media for the absorption of lipid soluble vitamins or other active principles in the food or medicine. Ghee stimulates biliary secretion and contraction of gall bladder, nourishes GI mucosa, lubricates it, enhances the absorption of fat-soluble vitamins and strengthens the colonic flora of useful microbes. Thus the usage of ghee in suitable conditions with appropriate doses of desired preparations will render various benefits due to its potency to nullify toxins and toxic effects of drugs; and its capability to act as a media to dissolve and enhance the efficacy of the active principles in the drugs used. The specific property of ghee to increase absorption, transportation and bio-availability of the drugs renders it suitable for use in treatment as medicine orally, by anorectal route and for external applications.

Drug Review

Traditional medicine has a long history of serving people all over the world. It is the sum total of cumulative knowledge [3]. The World Health organization has appreciated the importance of medicinal plants for public health care in the developing nations [4]. In the present context, herbal remedies are having a vital role in health care systems, because these drugs are easily available at low cost, are safe and people have faith in them [5]. Traditional medicine-inspired approaches remain important for the management of chronic diseases as well as to facilitate natural product drug discovery [6]. *Withania somnifera* (L.) Dunal belongs to the family solanaceae [7] and has been in use for over 2500 years to treat all kind of diseases and human ailments [8]. It is an adaptogen which is a nontoxic herb that works on a nonspecific basis to normalize physiological function, working on the HPA axis and the neuro-endocrine system [9]. *Withania somnifera*, known as Ashwagandha is an important medicinal plant that is being used in Ayurvedic and indigenous medicine for over 3000 years [10-11]. The main constituents of *Withania somnifera* are alkaloids and steroidal lactones namely; Withanine, Somniferine, Somnine, Somniferinine, Withananine, Pseudowithanine Tropane, Pseudo-Tropine, Choline, Anaferine, Anahydrine and Isopelletierine [7].

The Ayurvedic classics have mentioned Rasayana which is described as an herbal or metallic preparation that are health tonics to children, medicines to middle aged and rejuvenators to the

elderly. Among the Ayurvedic Rasayana herbs, Ashwagandha holds the most top place [12-15]. It helps invigorate the body by rejuvenating the reproductive organs, just as a tree is invigorated by feeding the roots [16]. *Withania somnifera* is widely claimed to have potent aphrodisiac, sedative, rejuvenative, and life prolonging properties [17-18]. It is also used as a general energy-enhancing tonic known as Medhya Rasayana (nootropic herbs) [19].

It has general animating and regenerative qualities and is used among others for the treatment of nervous exhaustion, memory related conditions, insomnia, tiredness, potency issues, skin problems and coughing [16]. It improves learning ability and memory capacity. Ashwagandha is preferred for adjuvant use in the management of various psychosomatic conditions and it improves tissue vitality, physical and mental endurance, and neuromuscular strength [20]. Ashwagandha is used as Rasayana since the ancient time especially for children in the management of malnourishment [21-22]. It has been also been reported to possess properties of immunomodulation [23-24], antiaging [25], antistress [26], cardiovascular protective [27]. It is also proved to be effective in hypothyroidism [28], anxiety and depression [29].

Ayurvedic pharmacodynamic properties of *Withania somnifera* [30-31]

Rasa: Tikta (Bitter), Katu (Pungent), Madhura (Sweet)

Guna: Laghu (Light), Snigdha (Unctuous)

Virya: Ushna (Hot)

Vipaka: Madhura (Sweet)

Doshakarma: Kapha-Vata shamaka (Alleviates Kapha and Vata Dosha)

Collection and Authentication of Raw Drugs

Two kilograms of *Withaniasomnifera* (L.) Dunal was collected from the local market of Thrissur, Kerala state, India in the month of March 2015. The collected drug was identified and authenticated at the teaching pharmacy of Department of Dravyaguna (Ayurvedic Pharmacology), SDM College of Ayurveda and Hospital, Hassan, Karnataka state, India. 30 liters of milk and 6 liters of ghee were procured from Karnataka Co-operative Milk Producers' Federation Ltd., Karnataka state, India.

Method of Preparation

The raw drug was dried in sunlight for a day (fig 1). It was then pounded (fig 2) and made into coarse powder using the mortar and pestle and coarse powder (kashayachurna) was separated. The rest of the drug was further pounded and made into fine powder using the mixer. 1.5 kilogram of coarse Aswagandha powder was weighed and soaked in 60 liters of water overnight (fig 3). The next day, the container was placed on a gas burner and heated (fig 4) till the decoction was reduced to half (by 6 hrs). This decoction was then filtered and kept aside (fig 5). Then 30 liters of milk was boiled (fig 6) and 6 liters of ghee was added to it (fig 6.1) along with bolus of 500 grams of fine powder (kalka churna) of Aswagandha (fig 6.2). The prepared 30 liters of decoction (kashaya) was added to the container and boiled in low flame for the next 2 hours and the heating was discontinued and left to cool overnight. The heating was resumed next day morning and occasional

stirring of the mixture was done. During the heating, a frothy layer appeared on the surface of the ghee (fig 7) and the milk started curdling forming a solid consistency by around 6 hrs of continuous boiling (fig 8). By 10 hrs of reduction, a cohesive mud like paste was formed at the bottom of the container (fig 9), after which continuous stirring was done so as to avoid charring of the paste. Slowly by the 12th hour of stirring, the frothy layer started disappearing. The heating was continued till all the water evaporated from the ghee and the ghee started separating from the paste (fig10). The ghee formed a clear, transparent and devoid of any froth (fig 11) as the preparation was nearing the end point. A small quantity of the paste was burned in fire to confirm that the entire water particle has evaporated by looking for the crackling sound when subjected to fire.



Fig 1: Dried raw drug



Fig 2: Pounding the raw drug



Fig 3: Soaking the raw drug



Fig 4: Boiling the decoction



Fig 5: Filtering the decoction



Fig 6.1: Adding ghee to milk on heat source



Fig 6.2: Adding Ashwagandha powder as bolus to the mixture of milk and ghee on heat source



Fig 7: Appearance of frothy layer on the surface of the ghee during heating



Fig 8: the milk started curdling forming a solid consistency by continuous boiling



Fig 9: Cohesive mud like paste forms at the bottom of the container



Fig 10: Ghee started separating from the paste



Fig 11: Ghee formed a clear, transparent and devoid of any froth

After obtaining this sign, the heating was stopped and the ghee was separated from the paste (before cooling) by squeezing and filtering through two fold muslin cloth (fig12). The filtrate was collected in a clean autoclaved vessel and was measured. 6.5liters of ghee was obtained. After cooling, 300 ml of ghee was measured, bottled in airtight containers and labeled (fig 13).



Fig 12: filtering the ghee through two fold muslin cloth



Fig 13: 300 ml of Ashwagandha ghee in airtight container

Observations

- From 2 kilogram of dried Aswagandha, 1.5kilogram was taken and 250 grams of fine powder was obtained.
- 60 liters of kashaya takes 8hours to reduce to 30 liters on low flame.
- Milk curdles by next day when added with Aswagandha (although Ashwagandha is a madhura- tikta pradhana dravya)
- Thick froth starts forming on the surface at around 10 hours of boiling which considerably disappears by the 18th hour, when the paste starts forming mud like consistency. This is a sign of nearing end point as almost all water has evaporated.
- Curdled milk starts to change consistency to mud like by the end of 2nd day of boiling(18th hour)
- Ghrita starts to separate almost one hour after the paste attains mud like consistency
- The paste gets charred at the bottom of the vessel if it is not continuously stirred.
- Since milk is curdled, the end point cannot be reliably tested by the sign of thread like consistency of the paste. Instead the absence of crackling sound of the paste when subjected to fire is more reliable to ensure absence of water content.
- The crackling sound is very conspicuous when end point has not reached and becomes almost absent at endpoint.
- For 6 liters of ghee taken, 6.5 liters of end product was obtained.
- 5 kilograms of paste was obtained after the ghrita was separated from the mixture.

Conclusion

The advent of modern technology in pharmaceutical sector has increased the efficacy of Ayurvedic formulations. Then also, more practical approach should be incorporated in the field of Ayurvedic medicine manufacture. As Ayurveda is foremost among the traditional health practices in the world, traditional inspired practical approach should be made in preparing prime quality preparations.

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