



Milk and Milk Products in Ayurveda: A Review [†]

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Abstract: Milk and milk products have been used by mankind since earlier days. Ayurveda makes use of dairy products for preventive and curative purposes as diet and in medicinal preparations. However, the exact reasoning behind such specific preparations and their concerned action is yet to be explored. Dairy products undergo many processes in preparation for use as part of diet as well as medicine. Milk being an emulsion has the ability to incorporate water-soluble and lipid-soluble substances from the drugs. Specific preparatory procedures such as heating and fermentation make drug delivery effective and increase bioavailability, thereby giving the desired therapeutic action.

Keywords: Ayurveda; pathya; milk; milk products; milk products and health

1. Introduction

Ayurveda is a traditional Indian system of medicine which has been practiced for more than 2000 years. This science has a holistic approach to health. The medicines and treatments in Ayurveda are personalised and give equal importance to medicine and diet. Ayurveda considers health as a well-balanced state of all anatomical, physiological and psychological entities [1]. Health and disease are said to be caused by consumption of wholesome and unwholesome diets, respectively [2]. Caraka Samhita mentions that without proper diet, medicines are of no use and with proper diet medicines are not required.

Ayurveda makes use of milk and milk products for preventive and curative purposes. However, the exact reasoning behind such specific preparations and their concerned action is yet to be explored. A close look at various analytical and experimental studies can help provide scientific reasoning behind the procedures involved in incorporating dairy products in Ayurvedic medicines and as to why certain preparations are used in specific conditions.

2. Methods

Here, the main Ayurvedic classical references to various methods of medicinal and diet preparation using milk and other dairy products are selected and scientific studies that help explain their action and efficacy are reviewed. Data from Ayurvedic classical books and articles from databases like PubMed, Scopus and Google Scholar were searched with boolean operators such as AND, OR and filters such as relevant, FULL TEXT, and selected for this review.

The classical books mentioning the use of dairy products and their specific preparatory procedures were focused upon. Online scientific studies were searched with more concentration on changes occurring in dairy products according to various procedures and how various dairy products are therapeutically helpful.



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3. Results and Discussion

In Ayurveda, milk and milk products such as buttermilk, curd, butter and ghee are often incorporated in medicinal formulations or prescribed to be taken along with medicine.

Milk from various animals is used according to Ayurveda. Mainly eight types of milk from animal origin are mentioned, namely that from cow, buffalo, goat, camel, human, sheep, elephant and single hoofed animals (horse, etc.) [3]. Among all, that from cow's milk is considered best. Among all lipid preparations, ghritha is considered best [4]. These are advised to be consumed daily for healthy living.

3.1. Without Therapeutic Processing

Ayurveda suggests consumption of milk alone for specific disease conditions, mainly those affecting the gastro-intestinal system when the patient becomes too ill to consume solid food normally. Scientifically, milk is considered a complete diet since milk contains an array of essential nutrients that contribute toward a healthy, balanced diet. Studies have revealed that a higher intake of calcium can aid in achieving better diet-induced weight loss. Milk is an important source of protein, calcium, phosphorus, iodine, riboflavin, and vitamins A and B12. Consumption of milk and dairy products may also help a healthy weight loss [5].

Milk and ghee are considered as an inevitable part of diet daily to promote health of individuals as per Ayurveda. Now, studies have also revealed that high consumption of milk and dairy products may have protective effects against coronary heart disease, stroke, diabetes, certain cancers and dementia [5].

3.2. Processed

Dairy products are made to undergo many processes for use as part of diet as well as medicine. The process of preparation varies according to the therapeutic use intended.

3.2.1. Boiling

For example, in Anutaila, the ingredients are boiled in goat's milk repeatedly for 10 times. Four studies proved this medicine to be very effective when applied via the nasal route—Nasya. This was found to be over 96% effective in chronic sinusitis in a clinical trial. Using this preparation, active ingredients of 27 herbs processed in goat's milk and sesame oil are applied via the nasal cavity and they help reduce inflammation as well as protect mucosal layers, giving the desired therapeutic action. It was also used with success for COVID treatment and preventive measures [6].

In case of ksheerapaka, the drug is boiled with milk and water and reduced to the quantity of milk [7]. In vivo experiments showed ksheerapaka from *Terminalia arjuna* was more efficacious and equipotent to its hydroalcoholic extract in the late phase of inflammation. This research points to the fact that extraction of active phytochemicals and their delivery to desired targets is better achieved by using milk instead of water [8].

A comparative study of Indukantham ghritha and Indukantham kashaya revealed that even though the ghritha had more phytochemicals in total, the kashaya showed higher phenolic content and higher antioxidant activity, which may be due to the water-soluble nature of phenols. The study concluded that extraction of fat-soluble components along with water soluble components may be a reason for the higher number of phytoconstituents in ghritha [9].

3.2.2. Fermentation

In preparations like Takrarishta, a fermentation process is used. This facilitates growth of beneficial gut microorganisms. A prebiotic is fermented using probiotic microbes to get efficient postbiotics. In vitro studies revealed potent probiotic cultures in this medicine thus making it helpful in conditions like IBD [10]. Probiotics were isolated from this among which *Lactobacillus plantarum* TP5 and *Kluyveromyces marxianus* TP6 and TM1 were the most

potent probiotics. Takrarishta is a commonly used medicine in a variety of GIT disorders like inflammatory bowel diseases [10].

3.3. As an Adjuvant

Dairy products are also used as adjuvant for some specific Ayurvedic medications as in the case of *Haridra khanda* and *Chyavanaprasha avaleha*. The drug delivery may be facilitated and bioavailability enhanced via this. For example, the ability of buttermilk to carry and stabilise curcuminoids has been proven [11]. Moreover, docohexanoic acid is found more in ghee prepared by traditional Ayurvedic methods, giving solid evidence to support the use of medicated ghee as a memory enhancer [12].

Ayurveda also emphasizes the importance of consumption of milk and milk products during pregnancy [13]. Clinical studies have proved the efficacy of Ayurvedic antenatal care. A clinical study concluded that maternal first-trimester milk intake (cow's milk) is positively associated with childhood general and abdominal visceral fat mass and lean mass, but not with other cardiometabolic risk factors like pericardial fat mass index, liver fat fraction, blood pressure, or lipid, insulin, and glucose concentrations [14].

4. Conclusions

Milk and other dairy products, when consumed properly, are inevitably good for health. Processing herbal drugs in milk and milk products can enhance their therapeutic actions as well as increase palatability. The processing in milk can also reduce the toxicity of certain raw materials, mainly toxic drugs, metals and minerals. Studies have also suggested that probiotic-rich milk and other dairy products are better in delivery and maintenance of probiotic bacteria of the human gut.

In total, one can safely support the Ayurvedic view that milk and ghee are to be used daily for healthy living. Specific preparatory procedures such as heating and fermentation make dairy-based drug delivery effective and increase bioavailability, thereby giving desired therapeutic action.

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