



FORMULATION AND EVALUATION OF WHITENING CREAM FROM JENNET MILK

Priyanka Adik*, Kalpana Ubale¹, Sayama Sayyad² and Rrutuj Kamble³

*Dr. Vedprakash Patil Pharmacy College, Chhatrapati Sambhaji Nagar, 431001.

¹Mangaldeep Institute of Pharmacy, Chhatrapati Sambhaji Nagar, 431001.

^{2,3}Department of Quality Assurance.

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*Corresponding Author

Priyanka Adik

Dr. Vedprakash Patil
Pharmacy College,
Chhatrapati Sambhaji
Nagar, 431001.

ABSTRACT

JENNET milk has become more popular, especially for specific groups like infants and the elderly. Recent research focuses on its special properties, such as fighting bacteria, influencing the immune system, and being hypoallergenic. These aspects can have positive effects on human health. JENNET's milk is gaining attention as a healthy alternative, particularly for those with allergies to cow's milk protein. It has a different fat composition, making it potentially better for health. The good bacteria in JENNET's milk might contribute to its positive effects. This review covers aspects like milk quantity, what it's made of, how long it lasts, and its benefits for health, treating conditions, and cosmetic use. Expect an increase in using JENNET's milk due to its potential health perks. JENNET milk stands out with lower fat but more minerals and lactose compared to other animal milks. It contains

powerful antimicrobial proteins, like immunoglobulin's and lysozyme, making it effective against certain bacteria and viruses. The whey protein in JENNET milk shows promise in fighting lung cancer, and the α -lactalbumin has various health benefits. With low casein and less β -lactoglobulin, JENNET milk is closer to human milk, making it easier on infants, especially those with cow's milk protein allergy. Additionally, it positively influences bone development.

INTRODUCTION

The JENNET (*Equus asinus*) is a member of the horse family, domestication began around 6000 BC in North Africa, over the centuries JENNETs spread to Asia, India, South America

and southern Europe.



Figure 1: Donkeys suckling children in a French institution, 1895.

Dairying and Fisheries and 19th Livestock Census Report, Percentage of JENNET the population in 2012 was reported as 5.12% in Karnataka and the highest at 25.56% was reported in the state of Rajasthan. The size of a JENNET varies greatly from 0.9m to 1.6 m. Pregnancy is approximately 12 months. Lactation period in the native Balkans JENNET breed ranges from 45 to 200 days. The life of a JENNET is 25-30 years. 3 There are several species in the wild: some of them are African, Asian and Himalayan (Mariani 2008). A male JENNET is called a jack and a female JENNET is called a jenny or jennet. Study by Dr. Parrot from l'Hospice des Enfants Assistés (Paris, France) v of the nineteenth century were probably the first scientific approach to the use of JENNET's milk in infants feeding. Dr. Parrot fed children afflicted with congenital syphilis directly from a donke udder. In particular, Dr Parrot carried out the first controlled trials of breastfeeding with JENNET's milk, comparing JENNET's milk with cow's and goat's milk, recording milk intake, weight gains children and analysis of the chemical composition of JENNET's milk. Dr. Parrot's studies led to creating a JENNET farm to feed orphaned children^[1] In recent decades, along with the rediscovery of its potential beneficial effect, JENNET's milk is becoming popular in Europe, especially in Croatia, France, Hungary, Italy Netherlands and Serbia and in several Asian countries. China in particular is big producer of JENNET meat and milk and the JENNET industry became important in countryside in China. JENNET's milk is considered natural milk with a composition closest to mother's milk in terms of lactose content and protein and amino acid profile. Scientific studies aimed at elucidating JENNET's milk composition and presence of functional compounds has increased in recent years.^[2] Until now, investigation were performed to highlight potentially bioactive compounds such as polyunsatd and omega 3 fatty acids, functional proteins, vitamins, polar lipids, phytosterols^[3]

and the variability of milk composition .New knowledge appeared leading to the development of studies focused on testing in vitro and in vivo potential effects of JENNET's milk in humans. This paper explores scientific evidence regarding the effects of JENNET's milk on human health and their potential application as an adjuvant in the treatment of cardiometabolic diseases, malnutrition, and aging.^[4]

Need of selection

JENNET milk's gentle efficacy and high nutritional content are the main reasons for its comeback in skincare products, especially whitening creams. This age-old concoction, which was once highly valued by societies for its ability to nourish skin, has drawn interest from contemporary customers looking for sustainable and natural skincare products. The remarkable composition of JENNET milk is a key component of its appeal. Packed with proteins, vitamins, and minerals, it provides a powerful combination of nutrients that deeply nourish and revitalize the skin. One of the main ingredients, vitamin C, is well known for its brightening properties, and the other ingredients, calcium and phosphorus, support skin health and regeneration. Not to be overlooked are JENNET milk's moisturizing qualities. Because of its resemblance to human milk, it can easily penetrate the skin's layers and provide deep hydration. This hydrating result aids in softening.

Benefits of jennet milk

JENNET milk fans often drink it for its health benefits that go beyond its nutritional content. In particular, it has gained a lot of attention as an allergen-friendly and immune-boosting food. Compared to the protein in cow's milk, which has about five times more casein than whey, the protein in JENNET milk has roughly equal proportions of casein and whey. Due to the significantly lower casein content, many people with cow's milk protein allergies can tolerate JENNET milk, as they have found that JENNET milk does not cause an allergic reaction^[10] This can be an advantage for anyone who is allergic to cow's milk but can benefit from the protein and other nutrients that dairy milk provides.

An Italian study of 81 children with cow's milk allergy found that all were able to drink JENNET milk without a negative reaction. JENNET milk exchange allowed regular weight and height gain.^[11] Still, if you have a known allergy, check with your healthcare provider before trying JENNET milk. While JENNET milk contains less casein than cow's milk, even trace amounts of casein can cause anaphylaxis in some people.

Another important component of JENNET milk is lactose. It helps your body absorb calcium, which is important for strong bones.^[10-12] Other compounds in milk may promote a healthier immune system. A laboratory study showed that JENNET milk has the ability to promote the release of cytokines, which are proteins that stimulate the immune system.^[12] The same study found that JENNET milk also causes cells to produce nitric oxide, a compound that helps dilate blood vessels. Nitric oxide can improve blood flow to your blood vessels, which in turn lowers your blood pressure.^[12]

Downside of jennet milk

The biggest disadvantage of JENNET milk is its price and availability. Because dairy farm JENNETs are limited in number and size, they are expensive to produce and sell – and therefore hard to come by. Europe has some larger manufacturers that sell powdered milk, but shipping overseas can be expensive. The price of JENNET milk, together with its low casein content, is also very expensive and difficult to use for cheese making. Another potential downside is that most small farms only sell raw JENNET milk, and drinking unpasteurized milk carries the risk of foodborne illness. Although JENNET milk has antimicrobial properties and tests usually find it free of harmful pathogens, there is always the risk that raw milk contains bacteria or other harmful toxins.^[13] This can be dangerous if given to infants, older adults, or anyone with a compromised immune system. If you want to try JENNET milk in liquid or powder form, look for pasteurized. Alternatively, heat raw milk to at least 161°F (72°C) for 15 seconds before drinking to kill any pathogens.^[14]

Finally, if you are lactose intolerant and experience symptoms like gas, bloating and diarrhea after consuming milk, JENNET milk is likely to cause the same symptoms due to its lactose content. People with lactose intolerance should therefore avoid or limit JENNET milk. Alternatively, you can break down the enzyme lactase before drinking the lactose.^[15]

MATERIALS AND METHOD

Table 1: Material and sources.

Sr. no.	Material	Use	Role	Quantity taken	Manufacturer/Sources
1	Milk powder (jennet)	API	Whitening agent, moisturizing, anti ageing, gentle exfoliation	45gm	Aadvik foods pvt. Ltd. Company (Online purchase)
2	Stearic acid	Emulsifying agent	Emulsifier, emollient,	4gm	Dr. vedprakash patil pharmacy college

			absorption enhancer, stabilizer		laboratory, DIPA chemical industries, chikalthana, A. bad
3	Glycerine	Emollient	Moisturizing, barrier repair, enhance penetration, soothing property	4gm	Dr. vedprakash patil pharmacy college laboratory, DIPA chemical industries, chikalthana, A. bad
4	Liquorice	Whitening agent	Skin lightning, anti inflammatory, anti oxidant, UV protection, hydration	2gm	Dr. vedprakash patil pharmacy college laboratory, DIPA chemical industries, chikalthana, A. bad
5	Methyl paraben	Preservative	Microbial protection, extend selflife, safety assurance	0.10gm	Dr. vedprakash patil pharmacy college laboratory, DIPA chemical industries, chikalthana, A. bad
6	Cetyl alcohol	Oil phase solvent	Texture enhancer, moisturizing agent	40ml	Dr. vedprakash patil pharmacy college laboratory, DIPA chemical industries, chikalthana, A. bad
7	Distilled water	Water phase solvent	Solvent, diluent, purity, hydration	30ml	Dr. vedprakash patil pharmacy college laboratory, DIPA chemical industries.

Instrumentation

Table 2: Instrumentation and Sources.

Sr. no.	Instrument	Manufratuerer/Source
1	Laboratory stirrer	Rolex enterprises Mumbai Maharashtra, Dr. vedprakashpatil pharmacy college.

METHODOLOGY

Step 1: Combine glycerin, stearic acid, vitamin E oil, and cetyl alcohol (40ml) in a controlled environment under gentle heating, ensuring homogeneity, followed by cooling for the oil phase mixture preparation.

Step 2: In a controlled setting, blend Jenet milk powder, liquorice powder, and methyl paraben thoroughly in 30ml of water to form the water phase mixture.

Step 3: Combine the oil phase and water phase mixtures in a beaker placed on a water bath set to 75°C.

Step 4: Remove the mixture from the water bath and allow it to cool down to ambient temperature, ensuring natural cooling for further processing in a controlled

Step 5: Continuously agitate the mixture using a laboratory stirrer to prevent the formation of lumps and ensure uniform consistency throughout the cooling process.

Step 6: Conduct a comprehensive evaluation of the resultant product, assessing its physical, chemical, and functional properties to determine its suitability for the intended application, employing standardized analytical techniques and comparative analysis where applicable.



Fig. 2: Jennet milk powder.

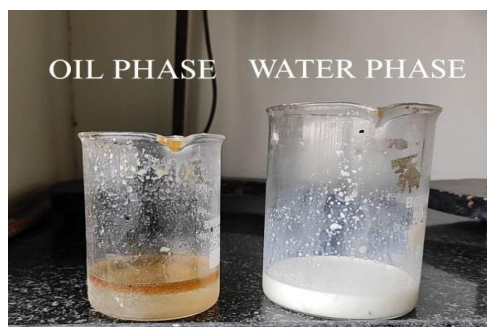


Fig. 3: Oil and Water phase.



Fig. 4: Prepared whitening cream.

Evaluation test

- 1. pH of the cream:** The pH meter was calibrated using standard buffer solution. About 0.5g of the cream was weighed and dissolved in 50.0 ml of distilled water and its pH was measured and pH was found to be 5.6
- 2. Viscosity:** Viscosity of the formulation was determined by Brookfield Viscometer at 100 rpm, using spindle no 7.
- 3. Homogeneity:** The formulations were tested for the homogeneity by visual appearance and by touch.
- 4. Appearance:** The appearance of the cream was judged by its colour, odour and roughness and graded.

5. **Spreadability:** The spreading ability standard of a whitening cream, particularly one containing Jennet milk powder, would depend on the formulation and consistency of the product.
6. **Washability:** The washability of Jennet milk powder whitening cream would depend on its specific formulation and ingredients.

RESULT AND DISCUSSION

The herbal formulation of whitening cream is prepared using Jennet milk as API and natural whitening agents such as liquorice for enhancing the whitening effect of formulation. The whitening cream is a cosmoceuticals formulation used to enhance the aesthetics of skin and therapeutically lightening the skin tone of all skin types.

The formulation is evaluated on the basis of physiological as well as constitutional aspects for better performance and efficacy having standardise values of pH 5.6, homogeneity, greater washability and spreadability for application on daily basis

The formulation is made up of jennet milk and other various natural ingredients and categorised in herbal preparations hence there are no side effects or adverse effects are seen in prepared product.

Table 5: Evaluation parameter.

Sr. no.	Parameter	Observations
1	pH	5.6
2	Colour	Pearl white
3	Odour	Milky sweet

CONCLUSION

1. The inclusion of Jennet milk powder in the formulation of this whitening cream offers promising potential for enhancing skin complexion. Its natural properties, such as high protein content and vitamins, contribute to nourishing and brightening the skin.
2. Through meticulous formulation and testing, the whitening cream incorporating Jennet milk powder has demonstrated remarkable efficacy in reducing melanin production and promoting a more even skin tone. Its gentle yet effective formula makes it suitable for various skin types.
3. This innovative formulation harnesses the power of Jennet milk powder to address hyperpigmentation and uneven skin tone, providing users with a safe and reliable solution for achieving brighter and more radiant skin. Continuous use promises long-lasting results

and improved skin health.

4. By incorporating Jennet milk powder, known for its skin-whitening properties, into the formulation, this cream offers consumers a natural alternative to traditional whitening agents. Its non-toxic nature and skin-loving benefits make it a standout choice in the market for those seeking a safe and effective whitening solution.

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