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Original Article

Influence of Season on Physico-Chemical Composition of Donkey Milk from Primiparous and Multiparous

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Abstract

Donkey milk is a food complex, beneficial human body due to specific physico-chemical composition. This product is recommended for people suffering from food allergies. It shows a very high similarity with milk woman. The purpose of this study was to evaluate the influence of season on milk ass. Samples were analyzed milk from donkeys primiparous and multiparous in two seasons (winter and summer). The content of fat, protein, lactose and water Included varied by season, but by marturity donkeys. The highest values were observed in multiparous donkeys and in summer (2.61% fat and 1.98% in winter summer; 1.96% protein and 1.93% in winter summer, lactose 6.80% 6.76% summer and winter).

Keywords: donkey, milk, fat, protein, lactose.

1. Introduction

There is a growing interest in the use of donkey milk as a food source for humans. The quantity of components and antimicrobial defense factors present in milk provides protection against microbial infections [1]. The specific composition of donkey milk is indicated as an alternative source of protein and intolerance treatment. Donkey milk was proposed as a nutraceutical food, because of bioactive compounds in the diet of infants and patients with atherosclerosis [3]. Woman's milk is the best food for infants. Donkey milk is considered closest to breast milk.

Allergies to cow's milk proteins are abnormal IgE-mediated reaction, this type of milk contains proteins that cause allergic reactions.

In order to find a better replacement for breast milk when not breastfeeding is possible or it is not possible to use cows' milk as an alternative, many researchers consider the use of milk from other mammals, goat, sheep, donkey as beneficial. The proteins in the milk of sheep, goats and buffaloes presents a reactivity strong, while milk protein ass have a low reactivity. This favors replacing cow's milk with milk ass [10]. Clinical studies have demonstrated that donkey milk can substitute milk for infant feeding woman exhibiting IgE-mediated allergies [9].

Donkey milk contains a series of anti-microbial factors, and in particular proteins, which play an important role in the immunomodulatory system for milk. Because antimicrobial factors, donkey milk produce beneficial effects on the gastrointestinal system in people with weak immune systems [8]. Donkey's milk has a high content of α-

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lactalbumin, β-lactoglobulin and lysozyme, whose amount depends on the period of lactation and season.

Highest quality milk meets the first 4 months of lactation, protein dropping steadily, reaching 40% of their maximum in the eighth month. This indicates a low grade whey protein synthesis with advancing lactation. The highest concentration of whey protein occurs in spring [4]. Ascorbic acid is present in donkey's milk, which is present in breast milk. It presents a variety of biochemical functions such as maintaining a natural barrier against infection, boosting antimicrobial activity.

It is an effective antioxidant, it can protect the body against free radical molecules essential [10]. Increasingly more consumers, such as children with allergies to cow's milk protein and older people show an interest in donkey's milk due to its [2].

2. Material and Method

Milk samples were collected from donkeys primiparous (n = 5) and multiparous (n = 5) in two seasons (winter and summer). Samples were collected in sterile containers and stored at 4 C until analysis. Lactoscan device was used for physico-chemical analysis. The following parameters were analyzed: fat, protein, lactose, water content and pH. Milk samples were collected from breeders in Cluj County. The donkeys had the same level of food and the same system maintenance

3. Results and discussions

Recent studies have shown the benefits it presents health donkey milk [6,7, 8, 10]. It gradually gaining increasing interest due to its nutritional and protein content, fat and minerals.

The digestibility of ass milk is much higher than that of cow's milk having composition similar to breast milk [6]. Knowing the chemical composition of donkey milk is very important, since the milk of economic interest. It can be used in the pharmaceutical industry for the production of products designed especially for people suffering from allergies.

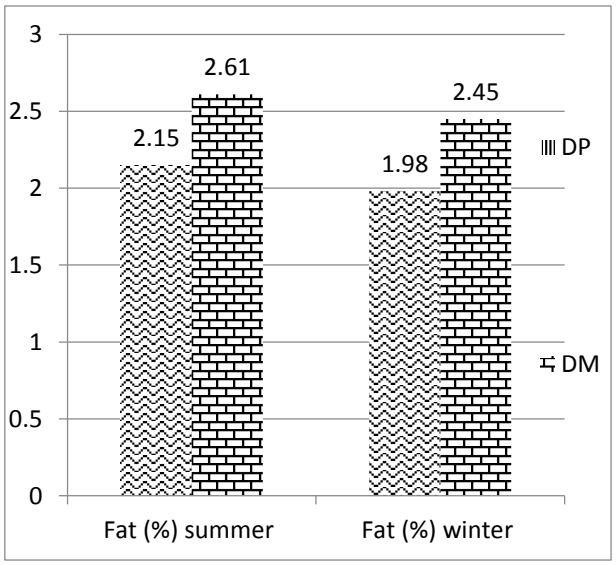
The chemical composition of milk is affected by the stage of lactation ass like other animal species [5, 7]. Figure 1 a-d show the average values for fat, protein, lactose, water content and pH of the milk of donkey under the influence of season.

The fat in milk donkey varied so under the influence of season: mean values were higher in the summer season (2.15%) and lower in the winter season (1.98%) to donkey primiparous.

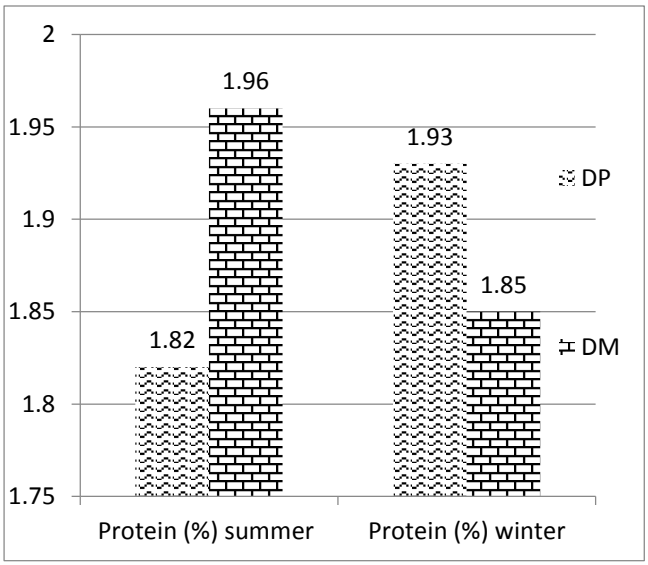
Higher values can be seen in donkeys multieven: (2.61% summer) and (2.45% in winter) (Figure 1 a). Protein varied so in summer (1.96% and 1.82% DM DP) and in the winter season (1.93% and 1.85% DP DM) (Figure 1b).

Lactose is a very important parameter for milk donkey, showing values much higher than fat and protein. Lactose is influenced by age donkeys, presenting the highest values to donkey multieven (Figure 1.c). Lactose varies as follows: (6.8% DM and 6.66% DP summer) and (6.73% DP and 6.76% DM winter).

The water content was high for such multieven asses: (88.78% 89.45% winter and summer), the primiparous values are lower (85.72 in winter and 86.95 in summer) (Figure 1.d). Ph did not vary under the influence of high season.



a



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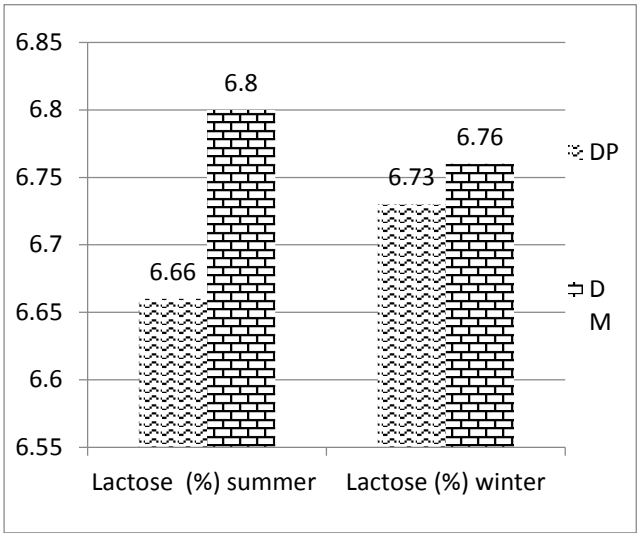

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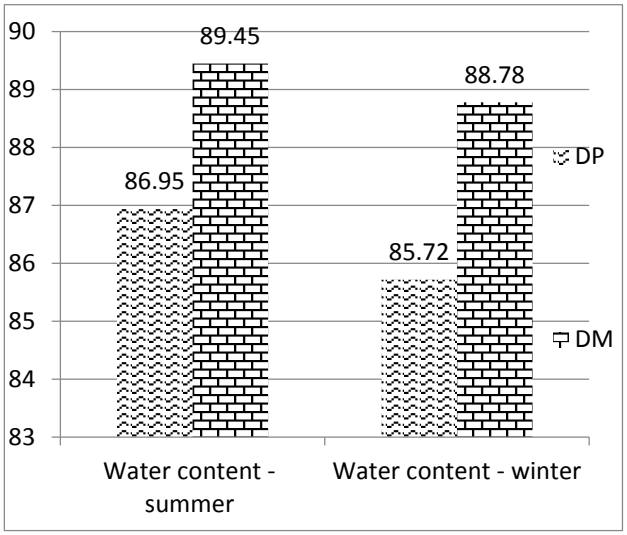

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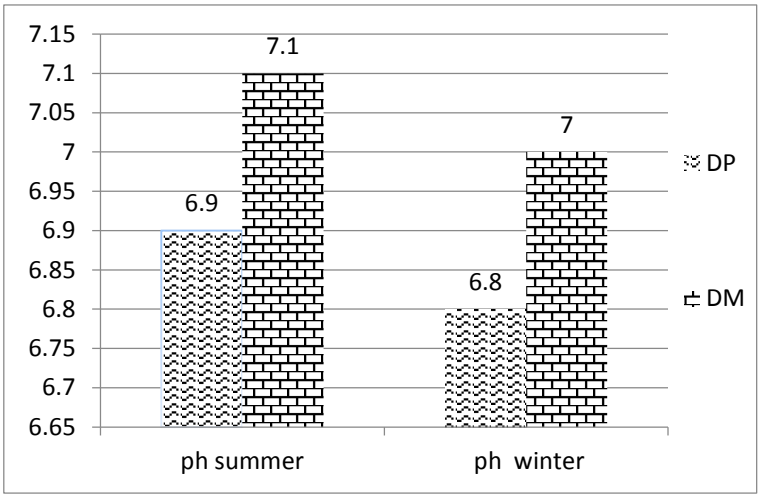

e.

Figure 1. a-e Fat (%) (a) protein (%) (b) Lactose (%) (c) water content (d) and (e) pH of milk in summer and winter to donkey primiparous and multiparous
(DP-donkey primiparous; DM-donkey multiparous; n-10 DP and DM)

4. Conclusions

Physico-chemical composition of donkey milk is influenced by season and age of animals. In the summer season average values for fat, protein and lactose were higher, especially in multiparous donkeys. Donkey milk lactose present a high content of protein and is low in total. The fat content ranged from 1.98% - 2.61%, influenced and maturity season and donkeys.

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