



## Comparative Assessment of Nutritional Effects on Milk Composition in Mares and Jennies

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**Abstract:** The growing interest in alternatives to bovine milk has highlighted mare and donkey milk due to their similarity to human milk and their nutritional potential. This study evaluated the influence of feeding systems on milk composition in mares and jennies during the first three months of lactation. Feed composition varied between farms, with crude protein ranging from 11.07% to 18.21% in mare diets and crude fiber reaching 30.26% in jenny farms. Milk composition differed according to species and lactation stage, with mare milk showing higher fat (1.06–2.18%) and protein content (3.15–3.58%), while jenny milk showed higher lactose levels (6.20–6.64%) and lower fat values (0.38–0.61%). Mares presented greater compositional variability in response to diet, whereas jennies maintained more stable values throughout lactation. These findings highlight the role of nutrition in modulating milk composition and support the nutritional and functional value of equine milk.

### Introduction

- Mare and jenny milk have gained increasing attention due to their nutritional, functional, and therapeutic properties. Compared to conventional dairy species, equine milk is characterized by high lactose content, low fat concentration, and increased digestibility, making it suitable for pediatric nutrition and individuals with cow milk intolerance. Milk composition is influenced by species, feeding system, and lactation stage, factors that may affect its nutritional and commercial value.

The comparative analysis of mare and jenny milk revealed distinct compositional differences throughout lactation. Mare milk showed higher fat (2.21–1.64%), protein (3.61–3.34%), and total solids content (11.69–10.97%), reflecting a more energy-dense composition adapted to rapid foal growth. In contrast, jenny milk presented lower fat (0.65–0.10%) and protein levels (2.64–0.97%), but higher lactose content (5.80–6.67%) and mineral concentration (0.67–0.92%), supporting increased digestibility and nutritional stability. These results highlight the distinct physiological adaptations and nutritional potential of equine milk in both species.

### Material and method

The study was conducted on six farms located in western Romania, three mare farms and three jenny farms. A total of 15 mares and 15 jennies raised under different feeding and management systems were included in the study. Milk samples were collected during four lactation stages: colostrum, early (day 14), mid and late lactation, corresponding to the second and third month of lactation. Feed composition was evaluated for each farm, and milk samples were analyzed for fat, protein, lactose, mineral content, and total solids using rapid ultrasonic milk analyzers.

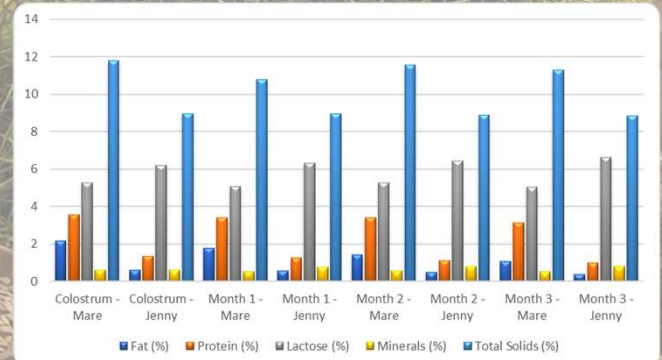


Fig. 1. Variations in Chemical Composition of Mare and Jenny Milk According to Lactation Stage

### Results and discussions

Feeding systems differed between farms, particularly regarding protein supply, forage-to-concentrate ratio, and metabolizable energy. Mare farms using higher concentrate supplementation presented increased crude protein and energy values, while jenny farms relied predominantly on pasture-based systems characterized by high fiber content and lower dietary intensity.

Higher concentrate and protein intake in mare farms was associated with increased milk fat, protein, and total solids content, indicating a strong influence of nutrition on milk composition. Jenny milk composition remained more stable across farms despite differences in feeding systems, reflecting the species' efficient adaptation to fiber-based diets and extensive management conditions.

### Conclusions

