INTRODUCTION

- Thyroid hormones in milk could stimulate lactation in the mother and play physiological roles for the suckling offspring.
- Donkey milk is valuable for human infants with cow’s milk allergy as well as for individuals with immune-related diseases.

AIMS

- To assay and evaluate changes of thyroid hormone concentrations in donkey milk and blood throughout lactation.

MATERIALS AND METHODS

- 16 lactating jennies, 32-58 days postpartum at the beginning of the study, stabled with their foals and machine milked after a 3 h-separation.
- Feeding: 8 kg of coarse hay and 2.5 kg of mixed feed (12.8 % CP) daily.
- Samplings at 14 d-interval, milk samples immediately processed for iodothyronines extraction with alkaline ethanol at −20°C until assayed.
- Total concentrations of T3 in milk and T3 and T4 in plasma were assayed using EIA kits (Radim, Rome, Italy), expressly validated for donkey species (intra- and inter-assay CVs for T3 and T4 and for milk and plasma: 2-8%).

RESULTS

- High variability of individual mean plasma concentrations (individual means range from 5.1±0.4 to 38.1±5.3 ng/mL and from 38.9±10.1 to 166.4±33 ng/mL for T3 and T4 respectively).
- Mean T3 in milk less variable among individuals (mean 4.0±0.1 ng/mL).
- Plasma T4 was affected by time (P<0.001), showing a rise from April forward.
- The highest mean plasma T3 was in June.
- Milk T3 concentrations were rather stable throughout lactation and not correlated with plasma concentrations.

DISCUSSION AND CONCLUSION

- To our knowledge, this is the first time that bioactive T3 in milk has been assayed by ELISA and in donkey throughout lactation.
- Bioactive molecules in donkey milk determine its nutraceutical properties, which are interesting especially considering “sensitive” consumers, for example infant or elderly people and other individuals with food-related disorders.
- Dairy donkey breeding may have great potential as a tool for the sustainable development of marginal areas.
- Further research will address the biological actions of thyroid hormones activity.