

# THYROID HORMONES IN BLOOD AND MILK OF LACTATING DONKEY: PRELIMINARY RESULTS

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## 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

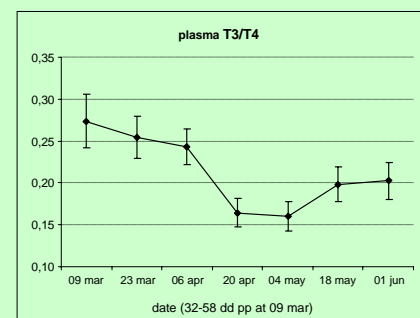
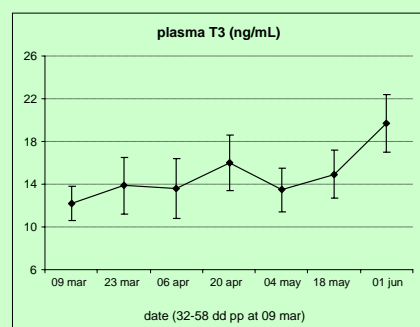
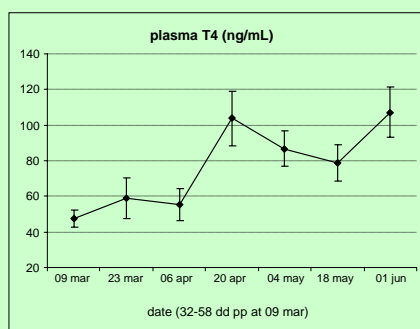
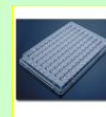
## AIMS

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



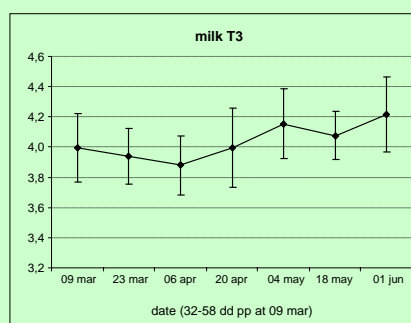
## MATERIALS AND METHODS

- ✂ 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  $-20^{\circ}\text{C}$ , blood samples collected in evacuated tubes (K3-EDTA), immediately centrifuged and the plasmas stored at  $-20^{\circ}\text{C}$  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  $5.1 \pm 0.4$  to  $38.1 \pm 5.3$  ng/mL and from  $38.9 \pm 10.1$  to  $166.4 \pm 33$  ng/mL for T3 and T4 respectively)
- ✂ Mean T3 in milk less variable among individuals (mean  $4 \pm 0.2$ ; range  $2.8 \pm 0.1$  to  $6 \pm 0.2$  ng/mL)
- ✂ Plasma T4 was affected by time ( $P < 0.001$ ), showing a rise from April forward
- ✂ The highest mean of 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