MARE MILK EFA COMPOSITION AND EFFECTS IN HUMAN NUTRITION

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1. INTRODUCTION

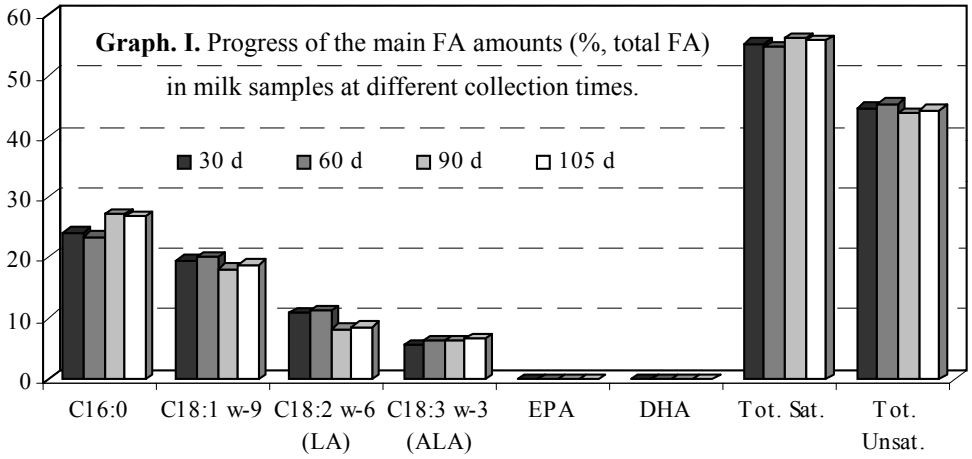
Fatty acids play an important role in humans, regulating several vital biological processes. Particularly, the increase of saturated/unsaturated fatty acids ratio in blood is considered a risk factor associated with the onset of cardio-vascular diseases. Based on this observation, a general decrease in fat dietary intake and a reduced nutritional saturated/unsaturated fatty acids ratio are desirable. Mare milk appears to be an interesting choice due to its dissimilar composition compare to cow milk. The aim of this work was to examine the fatty acid composition, and in particular essential fatty acids (EFA), saturated/unsaturated and linoleic/ α-linolenic ratio in Haflinger milk during the first period of lactation. The results obtained point out at the possible use of mare milk in relation to its fatty acid composition, especially in the diet-related disease prevention.

2. MATERIAL AND METHODS

Milk samples from 22 Haflinger multiparous mares, belonging to the same stud-farm, were collected at 30, 60, 90 and 105 days of lactation in order to evaluate the fatty acids content's variation (from C8:0 until C24:1) by gas chromatographic analysis. All mares received the same diet consisting of 4-5 kg concentrate (60% barley, 25% oats, 15% corn), *ad libitum* medium hay and fresh pasture. MANOVA with repeated measures was performed by JMP (SAS Inst., 1994) to evaluate significative differences at various collection times in linoleic and α-linolenic acids amounts.

3. RESULTS AND DISCUSSION

Palmitic, oleic and linoleic fatty acids showed highest amounts during lactation (Graph. I). Linoleic acid was 10.89% on total fatty acids in 30 days samples, with a not significative increase at 60 (11.21%) and significative decrease at 90 (8.35%) and 105 days (8.54%). The other essential fatty acid, α-linolenic, significantly increased from 5.56% on total FA in the first month until 6.29% at 60 days, 6.26% at 90, and 6.66% at 105 days (Table I). Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) were present only as traces. Linoleic/α-linolenic ratio was about 2:1 in 30 days samples and pointed out a progressive decrease, with a light increasing linolenic acid amounts during lactation. Saturated/unsaturated ratio was interesting, as a ratio between 1.2:1 and 1.3:1.



Graph. I. Progress of the main FA amounts (%, total FA) in milk samples at different collection times.

Table I. LA, ALA amounts (%, total FA), LA/ALA and Sat/Unsat FA ratio in milk samples at different collection times.

	30 d	*60 d*	*90 d*	*105 d*
C18:2 ω-6 (LA)	10.89 [a]	11.21 [a]	8.35 [b]	8.54 [b]
C18:3 ω-3 (ALA)	5.56 [a]	6.29 [b]	6.26 [b]	6.66 [b]
LA/ALA	1.98	1.78	1.44	1.29
Sat/Unsat FA	1.24	1.21	1.28	1.25

a, b: $p < 0.05$.

4. CONCLUSIONS

Linoleic/α-linolenic ratio in our samples could be interesting for human nutrition, especially for low EFA content diets, and ideal for preterm infant's nourishment, suggesting also an application in the adult: concentrations of these FA are remarkable and required because they can't be produced by human body. Moreover, saturated/unsaturated FA ratio could be considered desirable, showing an ALA amount increase during lactation.