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50. Comparison of CLA methyl esters and sunflower seeds in their effects on milk fat content and fatty acid profile in cows (Vergleich von CLA-methylesternund Sonnenblumenkernen hinsichtlich ihres Eintlusses auf den Milchfettgehalt und das Milchfettsaurenmuster bei Kühen) Frigga Dohme*, M. Co 110mb and G. Bee – Posieux/Bern

Feeding protected conjugated linoleic acids *(18:2c9t11/18:2t10c12,* CLA) or seeds rich in linoleic acid (18*:2c9c*12) increases the CLA content in the milk fat of cows. However, little is known whether similar effects cao be expected from unprotected CLA.

Methods: The experiment was conducted with 16 dairy cows (milk yield: 29.8± 0.4 kg/d; days in milk: 137± 6 d) which were randomly assigned to one *of* three supplementation treatments: 1) 1.0 kg/d ground sunflower seeds (SF; n=5), 2) 0.5 kgld CLA (CLA; n=6) or 3) 0.75 kg/d of a mixture of suntlower seeds and CLA (SFCLA; n=5). The supplements CLA and SF had the saille amount of 18:2 either as CLA or as 18:2c9c12. The CLA-oil (BASF-AG, Offenbach, Germany) was supplied as methyl ester, with a total CLA concentration of 60% equal1y composed of *18:2c9t11* and *18:2t10c12* isomers. The cows had free access to hay and fodder beets whereas the energy and protein concentrates were adjusted according to the milk yield and live weight. After being accustomed to the saille basal diet for Il d, the cows were fed the respective supplements for 18 d. During the last 4 d of the experimental period feed intake, live weight and milk yield were daily recorded and milk samples were col1ected at each milking. Blood samples were collected from the jugular vein on d 15 and 18 of the experimental period. Feeds were sampled throughout the experiment and analysed by standard procedures. The analysis *of* fatty acid composition *of* the milk fat was carried out according to the method described by Collomb and Bühler (1).

Results: Daily intake of dry matter (21.5 kg), total fatty acid (744 g), *18:2c9c12* and CLA (404 g) as weil as live weight (664 kg) and milk yield (28.5 kg) were not affected by the supplements. Although treatments had no influence on milk protein content and yield, fat content (SF: 3.6%; CLA: 2.1 %; and SFCLA: 2.0%) and yield (SF: 1101 g; CLA: 548 g; and SFCLA: 586 g) were depressed *(P* < 0.001) in the CLA and SFCLA compared to the SF treatment. The lactose content differed *(P* < 0.01) between treatments being highest in the SFCLA (5.0%), lower in the SF (4.8%) and lowest in the CLA (4.6%) group. The concentration ofsaturated fatty acids « 14:0) was increased *(P* < 0.01) in the milk *of* cows fed SF compared to those fed CLA or SFCLA. The highest CLA concentration was found in the CLA and the lowest in the SF group *(P* < 0.001). The *18:2c9t11* concentration was similar in the CLA and SFCLA treatments but higher *(P* < 0.001) than in the SF treatment. As expected the *18:2c9c12* content of milk from cows fed either SF or SFCLA was higher *(P* < 0.001) compared to milk from cows fed CLA. Although the fat content was lowest in the CLA group, the amount *of* daily excreted *18:2t10c12* was higher compared to the SF and SFCLA groups, whereas no differences among treatments were round in the amount of excreted *18:2c9t11.* Compared to the SF and CLA treatment the 16: 1/16:0, 18: 1/18:0 and *CLAl18:1t10/11* ratios were higher *(P* < 0.05) in the SFCLA treatment. In the plasma the free fatty acid concentration *of* cows fed CLA or SFCLA was higher than of cows fed SF *(P* < 0.05).

Conclusions: Although the dietary concentration of *18:2t10c12* was highest in the CLA treatment, the partial replacement of CLA by suntlower seeds had the saille inhibitory effect on milk fat synthesis. The dietary CLA supply caused an increase of CLA isomers in the milk fat but due to the low milk fat content the daily excretion *of* CLA in the milk was markedly higher with sunflower seeds.

1) COLLOMB, M. and BÜHLER, *T.,* (2000): Mitt. Lebensm. Hyg. 91: 306-332.

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