RELATIONSHIP BETWEEN MILK C18:1 TRANS-10 ISOMER AND MILK FAT DEPRESSION (MFD) IN DAIRY GOATS AND SHEEP

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The C18:1 trans-10 fatty acid (FA) is present in the milk fat of ruminants presenting milk fat depression syndrome (MFD) and it is an intermediary of the biohydrogenation of conjugated linoleic acid (CLA) trans-10, cis-12. The objective of this study was to evaluate the relationship between milk fat content of C18:1 trans-10 and the milk fat content in lactating goats and sheep under CLA trans-10, cis-12 induced MFD. A database from published studies was constructed using 85 observations for goats and 133 for sheep, which received different doses of CLA trans-10, cis-12. The data were analyzed using the procedures REG and NLIN of SAS. The linear model resulted in the following regressions: for sheep, % fat = 3.30 - 0.89 * % CLA trans-10, cis-12; r² = 0.32 (P = 0.0001) and for goats, % fat = 6.61 - 2.66 * % CLA trans-10, cis-12; r² = 0.55 (P = 0.0001). For the nonlinear model the regression with an exponential decay is y = a * exp(b * x) + c, where "y" is the % fat in milk, "x" is the concentration of C18:1 trans-10 in milk, "a" is the scale, "b" is the fractional rate of exponential decline and "c" is the constant lower asymptote. The regressions obtained were, respectively, for ewes and goats: y = 5.59 * exp(-0.77 * x) + 1.42 and y = 2.19 * exp(-0.91 * x) + 1.46. The rate of decline in fat content is higher in goats (18%) but it is observed that the lower fat content is similar between goats and sheep (1.42 vs. 1.46 in sheep and goats, respectively).

Keywords: Fatty acids, biohydrogenation, CLA, lipid, ruminants