

DELTA-9 DESATURASE INDEXES IN HOLSTEIN X ZEBU COWS RECEIVING OR NOT COBALT-EDTA AS A LIQUID PHASE MARKER IN DIETS CONTAINING DIFFERENT SOYBEAN OIL LEVELS

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Previous studies have shown that the use of cobalt-EDTA (Co-EDTA) as a liquid phase marker appears to inhibit Δ -9 desaturase activity in mammary glands of Ayrshire cows. The aim of this study was to estimate the Δ -9 desaturase activity in crossbred Holstein x Zebu cows receiving or not Co-EDTA by using regression equations between its products and substrates. Twelve (n=12) non-fistulated and four (n=4) fistulated multiparous Holstein x Zebu cows were used in studies 1 and 2, respectively. In study 2, cows were fed 5g of Co-EDTA (17.2% of Co) dissolved in 200 ml of distilled water in order to estimate the ruminal passage rate of the liquid phase. All animals were in mid-lactation and received the following dietary treatments (DM basis):

- 1) Control: no soybean oil (SO);
- 2) SO1: diet with 1.5% of SO;
- 3) SO2: diet with 3.0% of SO and
- 4) SO3: diet with 4.5% of SO.

The design was a 4 x 4 Latin Square with 15-days treatment periods (10 for adaptation and 5 for data collection - study 1) or 21-days treatment period (11 for adaptation and 10 for data collection - study 2). Diets were fed once daily as a total mixed ration (TMR) and were composed of chopped Elephant grass and a concentrate mixture (50:50, DM basis). The concentrate was composed of corn, soybean meal, citrus pulp and a mineral-vitamin supplement. As SO was added, the corn was progressively reduced. In study 1, the milk produced at each milking was collected on the first day of each collection period and separated according to dietary treatment to produce butter. In study 2, milk samples were collected individually on the first day of each collection period. Both butter and individual milk samples were analyzed for FA profile by gas chromatography (Cruz-Hernandez et al. JDS, v.90, p.3786-3801, 2007). In the studies 1 and 2, the linear regression equations (SAS, 2002) between products and substrates for Δ -9 desaturase enzyme were, respectively: $C14:1 = -0.0006 + 0.1209 \cdot C14:0$ ($P < 0.0001$) and $C14:1 = 0.1906 + 0.0556 \cdot C14:0$ ($P = 0.0123$); $C16:1 = 0.1387 + 0.0512 \cdot C16:0$ ($P < 0.0001$) and $C16:1 = -0.202 + 0.05 \cdot C16:0$ ($P < 0.0001$); $C18:1 = 11.8 + 1.1285 \cdot C18:0$ ($P = 0.0048$) and $C18:1 = 16.83 + 0.3719 \cdot C18:0$ ($P = 0.41$); $CLA\ c9t11 = 0.5477 + 0.4487 \cdot C18:1\ t11$ ($P < 0.001$) and $CLA\ c9t11 = 0.4027 + 0.336 \cdot C18:1\ t11$ ($P < 0.001$). Overall, these results indicate a lower Δ -9 desaturase activity in Holstein x Zebu cows receiving Co-EDTA, corroborating previous studies with Ayrshire cows. (Financial support: FAPEMIG and CNPq).