The Effects of Linoleic Acid on the Fermentation Parameters, Population Density, and Fatty-acid Profile of Two Rumen Ciliate Cultures, *Entodinium caudatum* and *Diploplastron affine*

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Summary. The effects of linoleic acid supplementation on protozoa counts, fermentation parameters and fatty-acid composition of *Entodinium caudatum* and *Diploplastron affine* were examined in *in vitro* cultures. *Entodinium caudatum* (EC) and *Diploplastron affine* (DA) were isolated from the rumen of sheep (Slovak Merino breed) and cultivated anaerobically in the presence of bacteria in caudatum-type medium. To test the effect of soluble linoleic acid (LA) on protozoan growth, both ciliate species were supplemented with LA (1.51 µg/L) on the day of dilution over a 30-day period. Twenty-four-hour fermentation parameters were examined on both ciliate cultures and their respective bacterial fractions. Ciliate counts of both EC and DA cultures were not significantly affected by supplemented LA. The major impact of the soluble form of LA supplementation was found in the bacterial fractions of both ciliate cultures. LA supplementation had a greater effect on fermentation parameters and fatty-acid contents in the EC experimental groups than in the DA groups. Our results suggest that experimental rumen ciliates and their associated bacterial populations had different metabolic responses to the tested form and concentration of supplemented LA.

Key words: Protozoa, fatty acids, rumen fermentation parameters, *in vitro*.

Abbreviations used: CLA – conjugated linoleic acids; DA – *Diploplastron affine*; EC – *Entodinium caudatum*; IVDMD – *in vitro* dry matter degradability; LA – linoleic acid; VFA – volatile fatty acids; SFA – saturated fatty acids; SCFA, short-chain fatty acids (C6:0–C10:0); MCFA – medium chain fatty acids (C12:0–C16:1); LCFA – long-chain fatty acids (>C17:0); MUFA – monounsaturated fatty acids; PUFA – polyunsaturated fatty acids.