

IN VITRO BIOHYDROGENATION OF LINOLENIC AND LINOLEIC ACIDS BY MICROORGANISMS OF RUMEN FLUID.

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TÓM TẮT:

In vitro anaerobic incubation of timothy (*Phleum pratense* L.) forage with bovine rumen fluid were conducted at 39°C for 0, 3, 6, 9, 24, and 36h in three trials to examine the biohydrogenation of linolenic (C18:3) and linoleic acids (C18:2) and their by pass from the rumen. The objectives of the first trial was to study the effect of growth stage (stem elongation, early heading, late heading, and early flowering) and N-fertilization (0 and 120 kg N ha⁻¹) on in vitro biohydrogenation of C18:2 and C18:3. The hydrogenable fraction, the effective disappearance and the bypass of C18:2 and C18:3 were high in timothy harvested at stem elongation, and decrease linearly with maturity. The N-fertilization increased the hydrogenable fraction of C18:3, the effective disappearance and the bypass of C18:2 and C18:3. However, the rate of disappearance of C18:2 and C18:3 were not effected by maturity and N-fertilization ($P>0,1$). In trial 2, the effect of timothy conservation method on in vitro C18:2 and C18:3 biohydrogenation was determined. Silage had the highest effective disappearance of C18:2 and C18:3, and grass hay had lowest one. The amount of C18:2 and C18:3 biohydrogenated were higher in haylage and silage than in grass hay. Comparative to haylage timothy, the bypass of C18:3 was higher in fresh grass, wilted grass and grass hay. In trial 3, the effects of formic acid and *Lactobacillus plantarum* inoculum addition to timothy haylage and silage on C18:2 and C18:3 disappearance and bypass were studied. Haylage and silage additives had no effect ($P>0,1$) on effective disappearance and bypass of C18:2 and C18:3. The addition of formic acid increased the rate of biohydrogenation of C18:3 in haylage and silage, but it decreased the hydrogenable fraction of C18:2 in silage. The results of these three incubation trials show that the hydrogenable fraction and the bypass of C18:2 and C18:3 in timothy decreased with maturity and increased with N-fertilization. Higher amount of C18:2 and C18:3 were biohydrogenated in haylage and silage than in grass hay, and C18:3 ruminal disappearance was higher in fresh grass, wilted grass and grass hay than in haylage.