

In vitro effects of medium-chain fatty acids from coconut oil on methanogenesis from rumen inoculum of goats supplemented or not with coconut oil in early life

The aim of this study was to evaluate whether dose response relation on *in vitro* methane production after treatment is influenced by an earlier exposure of the ruminants to the same treatment (early in life). Twenty pregnant Saanen goats giving birth to two kids were used; ten were supplemented during the last three weeks of pregnancy with 40 g/day of MCFA. After birth one kid per doe in both groups was treated with MCFA (k+) for 2 months while the other was untreated (k-) resulting overall in four experimental groups D+k+, D+k-, D-k+ and D-k-. Rumen samples were collected at 6 months to perform *in vitro* incubations at five different doses (0, 15, 30, 60 and 120 mg/flask) of MCFA. MCFA supplementation decreased the *in vitro* CH₄ production and the acetate:propionate ratio (P<0.05), but the CH₄ inhibition was smaller in the rumen inoculum of animals which had received the same treatment early in life or animals of which their mothers were treated during pregnancy (P<0.05). MCFA affect the total *in vitro* VFA production. Differences in response to *in vitro* supplementation of MCFA (during late pregnancy or early in life) suggest some 'programming' in the functioning of the rumen microbial community.