Insect meal in ruminant nutrition: *in vitro* fermentation characteristics and comparison with conventional protein source

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This research aimed to evaluate the nutritional composition, *in vitro* digestibility, and gas production kinetics of *Hermetia illucens* (HI) and *Tenebrio molitor (TM)* processed proteins compared with soybean meal f.e. as a reference raw material. Nutritional characterization and in vitro ruminal fermentation tests were performed to determine *in vitro* short-chain fatty acids production, the gas production profile and methane production. *HI* and *TM* were both full fat meal with a mean protein content of 41 and 61 % respectively and the soybean meal had 45 % of crude protein. Total gas production (value expressed in mL as mean ± SD) was lower for both *HI* (27±4.5) and *TM (23*±3.3) processed proteins compared to soybean meal (77±2.1). Similarly, differences have been observed in the case of short-chain fatty acids production which was higher when soybean meal was used as substrate than with *HI* and *TM*. However, when considering fatty acid molar proportion differences were observed only in case of propionate, isobutirate, isovalerate, and valerate. Interestingly methane production (value expressed in μmol as mean ± SD) was lower for insect processed proteins (*HI* 70±15; *TM* 59±4.5) compared to soybean meal (282±7.6). Obtained results indicated that insect processed proteins hereby tested were characterized by low fermentation profile, thus it might speculate that they could represent a valid by pass protein source.