In vitro large intestinal fermentation of growing Iberian pigs under heat stress

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Changes in large intestine fermentation may be expected in heat stressed (HS) animals. The aim of the investigation was to study *in vitro* intestine fermentation differences in growing Iberian pigs under control (22 ºC, 30 d; TN) or HS (30 ºC, 30 d) conditions. Sixteen Iberian barrows (44 kg) were assigned to HS or TN pair-fed group. The diet was barley-soy bean meal based covering all nutrient requirements. Pigs were slaughtered at 60 kg and rectum content collected and kept at -80 ºC until the fermentation experiment. We set up an *in vitro* batch culture method to assess fermentability of ingredients for pig diets. Pectin and starch were fermented *in vitro* in a faecal slurry consisting of an anaerobic culture medium, salts and faeces (5%, $P<0.05$) from pigs under HS or TN conditions. After 24 h of fermentation, production of gas, VFA and NH_3 concentrations were measured. Heat stress increased total VFA, propionate, butyrate production (13%-17%, $P<0.05$) and gas production (8%, $P<0.05$) compared to TN pigs when starch was used as substrate. Furthermore, there was a decrease in acetate production (17%, $P<0.05$), acetate:propionate ratio (32%) and valerate molar proportion (31%, $P<0.05$). When pectin was fermented, heat stress similarly increased total VFA, acetate and propionate production (12, 11 and 47%, $P<0.05$), propionate molar proportion (32%, $P<0.05$), gas production and NH_3 concentration (10 and 18%, $P<0.05$). Additionally, there was a decrease in valerate production and molar proportion (51 and 56%, $P<0.05$) and butyrate and valerate molar proportions (17 and 56%, $P<0.05$). Moreover, acetate:propionate ratio and valerate molar proportion were decreased (33 and 31%, $P<0.05$). Large intestine fermentation of Iberian pigs under HS seems to perform better than in TN conditions using starch or pectin as substrates.

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