210 In vitro evaluation of the fermentation characteristics in the pig intestines of hulless barleys differing in β-glucan content. R. Jha1,2, J. Bindelle1,3, B. Rossnagel2, A. Van Kessel2, and P. Leterme*1, 1*Prairie Swine Centre Inc., Saskatoon, SK, Canada*, 2*University of Saskatchewan, Saskatoon, SK, Canada*, 3*Faculté des Sciences agronomiques, Gembloux, Belgium*.

Non-starch polysaccharides (NSP) in isolated form, especially β-glucans, are reported to have prebiotic effects in pigs. However, little information is available on the possible functional properties of these NSP when the latter are still present in the fibrous matrix of whole cereals. Hulless barleys (HB) are good sources of β-glucans and the content is quite variable among varieties. In order to evaluate the potential of HB as functional feeds, an in vitro experiment was carried out to study the fermentation characteristics of 6 HB varieties varying in their β-glucan contents (36-99 g/kg DM) in comparison to 3 hulled barleys and 5 oats. After a pepsin-pancreatin hydrolysis, the ingredients were incubated in a buffer solution containing minerals and pig feces as inoculum. The accumulated gas production, proportional to the amount of fiber fermented, was measured for 48 h and modeled. Short-chain fatty acid (SCFA) and ammonia concentration were measured in the fermented solutions. A cereal type effect ($P < 0.05$) was observed on the fermentation kinetics parameters. Rates of degradation and total gas productions were higher in HB than in oats ($P < 0.05$) but no difference was observed between HB varieties. On the contrary, differences were found between HB for lag time and rate of degradation. The production of SCFA was also higher with HB (6.1 mMol/g DM incubated; $P < 0.05$) than with hulled barleys and oats (4.9 and 2.9 mMol/g DM incubated respectively). In contrast, oats generated higher ammonia ($P <0.05$) production (1.4 mMol/g DM incubated, on average) than barley (1.0 mMol/g). In conclusion, HB are better fermented in vitro, produce more beneficial (SCFA) and less harmful (ammonia) metabolites and have a better potential than other cereal species to modulate gut microbiota and improve gut health.

Key Words: NSP, pig, fermentation

J. Anim. Sci. Vol. 87, E-Suppl. 3, 103
http://www.asas.org/abstracts/2009sectional/Supplement_3-42.pdf
ABSTRACTS
2009 ADSA/ASAS Midwest Meeting
March 16–18, 2009