INFLUENCE OF VARYING THE LEVEL OF FAT AND FERMENTABLE FIBRE IN GROWING PIG DIETS ON FAECES COMPOSITION, GUT MICROBIOLOGY, AMMONIA (NH_3) AND METHANE (CH_4) EMISSIONS

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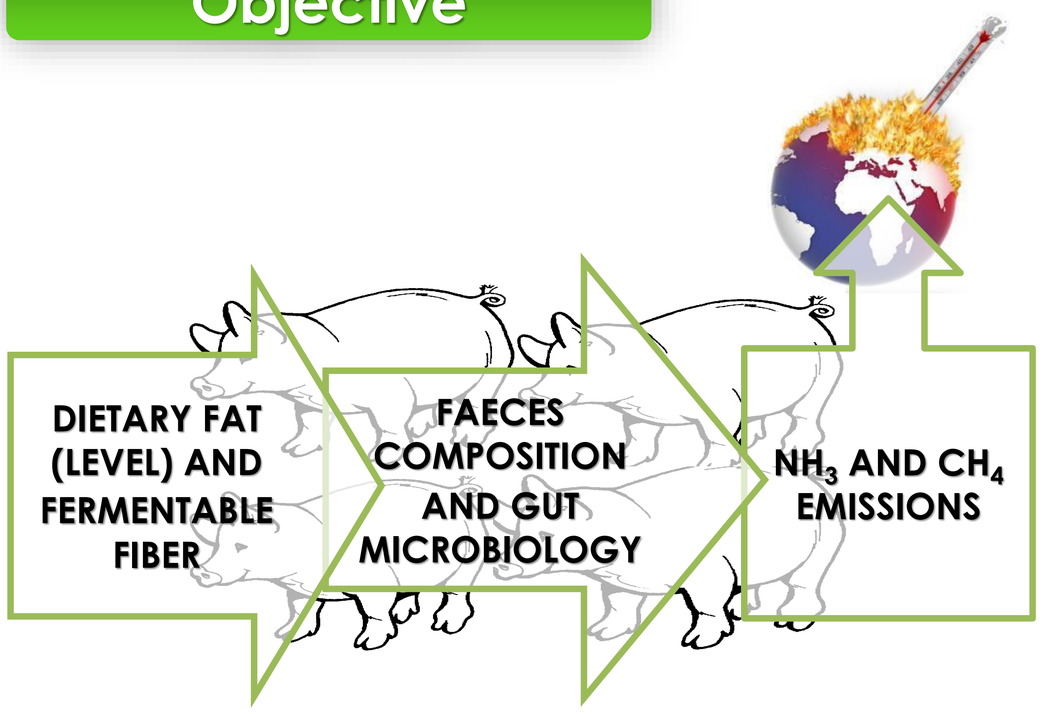
Objective

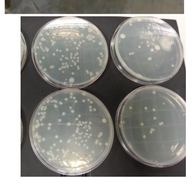


Materials and Methods

Animals and feeds:

- ✓ *30 growing pigs of 58.0 ± 7.99 kg BW (6 animals /treatment)*
- ✓ *5 feeds:*
  - ✓ ***Control :*** *0% calcium soap of palm fatty acids distillate (CSP) and 0% orange pulp (OP)*
  - ✓ ***35CSP:*** *35 g/kg CSP*
  - ✓ ***70CSP:*** *70 g/kg CSP*
  - ✓ ***35CSPOP:*** *35 g/kg CSP + 200 g/kg of OP*
  - ✓ ***70CSPOP:*** *70 g/kg CSP+ 200 g/kg of OP*

Experimental period and measurements:



- ✓ *14 days of adaptation and 7 days of sample collection in metabolic pens.*
- ✓ *Faeces composition and microbiology*
- ✓ *Potential NH_3 emission and biochemical CH_4 potential (B_0)*
  - ✓ ***Faeces composition:*** *DM, OM, EE, CP*
  - ✓ ***Microbiology:*** *plate-counting technique*
  - ✓ ***NH_3 :*** *Dynamic chamber with acid traps (cumulative emission 11 days)*
  - ✓ ***CH_4:*** *Cumulative production per gram of VS in a batch assay (100 days) with inoculum*

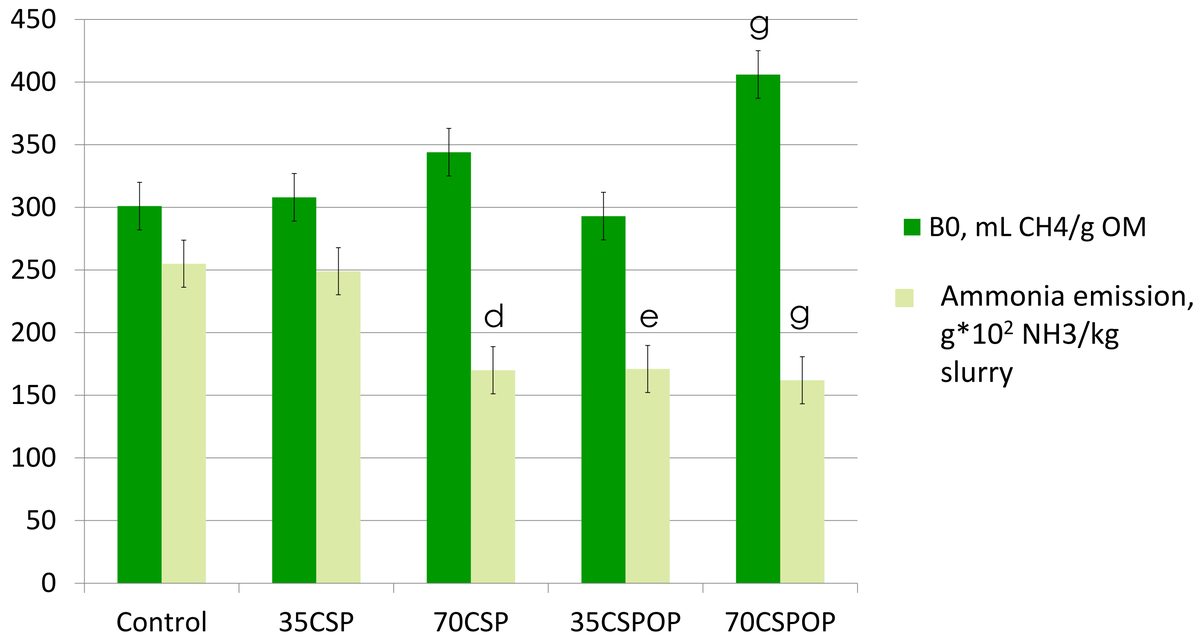
Results

- ✓ *Increasinfg CSP from 35 to 70 g/kg greatly increased faecal EE content*
- ✓ *OP addition increased faecal EE and CP content*
- ✓ *Treatments did not affect bacteria counts in faeces*

	Diets[a]					Significance[b]		
	Control	35CSP	70CSP	35CSPOP	70CSPOP	SEM[c]	CSP	OP
Faeces composition (g/kg DM)								
Dry matter	378	345	363	375	362	13.6	0.861	0.308
Organic matter[d,e]	836	844	857	850	844	2.77	0.200	0.244
Ether extract[d,e,f,g]	85.8	131	199	145	209	4.16	<0.001	0.012
Crude protein[e]	198	172	176	234	217	6.85	0.362	<0.001
Faeces microbiology (log CFU/gr faces)								
Enterobacteria	5.61	5.67	6.04	5.28	6.62	0.041	0.071	0.86
Lactobacilli	7.18	7.19	7.53	6.86	6.94	0.401	0.901	0.501

[a] CSP = calcium soap of palm fatty acid distillate; OP =orange pulp.
[b] CSP=effect of level of inclusion of CSP; OP = effect of inclusion of 200g/kg of orange pulp.
[c] Standard error of means (n=6).
[d] Contrast control vs 70CSP (P<0.05).
[e] Contrast control vs 35CSPOP (P<0.05).
[f] Contrast control vs 35CSP (P<0.05).
[g] Contrast control vs 70CSPOP (P<0.05).

- ✓ *Increasing CSP from 35 to 70 g/kg increased potential CH_4 emission*
- ✓ *Ammonia emission was lower in diets with CSP but was not affected by OP*



Conclusions

- ✓ *The dietary modifications studied lead to differences on faces composition in terms of EE and CP content.*
- ✓ *CSP inclusion increased CH_4 potential emission whereas decreased NH_3 emission*
- ✓ *A potential interaction between the level of fat and the inclusion of OP on NH_3 emission was detected*

Akcnowledgements

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Further info