

Influence of the inclusion of standard tapioca meal in balanced diets on pig performance and health parameters

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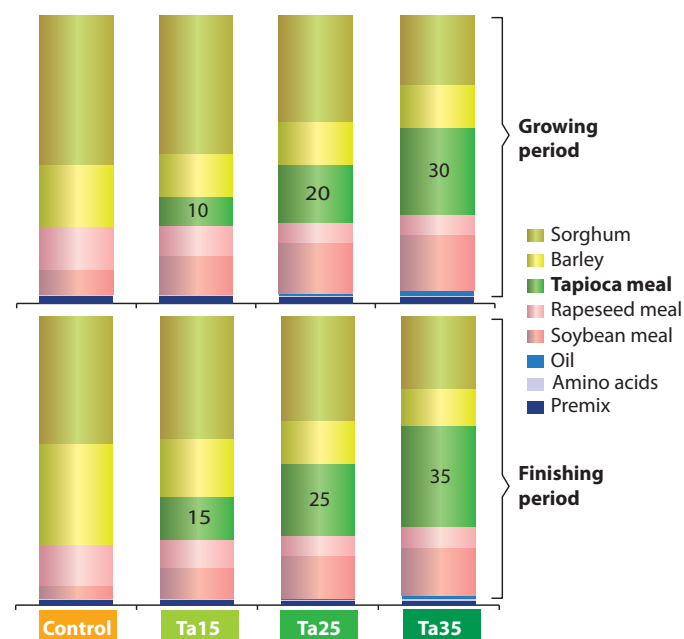
Due to their high starch content, tapioca (cassava) roots (*Manihot esculenta* Crantz) are an excellent source of energy for pigs. However, lower inclusion rates in pig fattening diets are often proposed for standard tapioca pellets containing 62.5 % starch than for high quality tapioca meal or chips containing 70 % starch, as a result from higher ash and fiber contents and lower energy digestibility. An experiment was undertaken to examine the effect of the tapioca pellet proportion in feed on pig performance and health condition of fattening pigs.

Materials and methods

160 castrate male and female pigs of medium health status with PMWS disease (28.9 kg; LWxLDx P76) in a 102 d experiment.

Four grower then finisher diets:

- **Control:** based on sorghum, barley, soybean and rapeseed meals, amino acids, microbial phytase, minerals and premix.
- **Ta15:** 10 then 15 % of tapioca meal,
- **Ta25:** 20 then 25 % of tapioca meal,
- **Ta35:** 30 then 35 % of tapioca meal.



Ingredient composition of growing and finishing diets

- Standard tapioca meal with 63.7 % starch, 5.5 % crude fiber, 5.5 % ash, 3.1 % HCL insoluble ash (sand/silica), low cyanide content (< 10 mg/kg of hydrocyanic acid), good bacteriological quality and a calculated net energy (NE) value of 9.42 MJ/kg.
- All diets balanced for net energy (9.50 MJ/kg) and amino acids (0.90 then 0.80 g digestible lysine/MJ NE).
- Pigs in 4 pens of 5 pigs each, per treatment and sex.
- Feed as meal, mixed with water in the trough (1:1 water to feed ratio), and distribution equalized among the treatments.

Results

Growing-finishing pigs had clinical signs of PMWS disease, but their number was not influenced by the diets. Losses and veterinary treatments were similar among treatments during the fattening periods.

Effect of diet on pig health

	Control	Ta15	Ta25	Ta35	Stat
Number	40	40	40	40	
Losses or removed,	3	0	2	2	ns
Treated pigs, n	9	8	9	9	ns
Vet treatments per pig, %	25.0	27.5	30.0	32.5	ns
• lameness, %	2.5	12.5	0.0	5.0	ns
• respiratory, %	2.5	2.5	2.5	5.0	ns
• enteric, %	2.5	0.0	5.0	2.5	ns
• anorexia; poor weight gain*, %	12.5	12.5	22.5	17.5	ns
• other, %	5.0	0.0	0.0	2.5	ns

* PMWS clinical signs

Feed intake (mean: 2.31 kg/d), daily gain (816 g/d), feed conversion rate (2.83 kg:kg) and carcass parameters were not affected by the tapioca meal inclusion rate.

Effect of diet on pig performance

	Control	Ta15	Ta25	Ta35	RMSE	Stat
Weight d 1, kg	28.9	28.9	28.9	28.9	0.0	ns
Weight at slaughter, kg	111.1	111.5	111.9	112.0	2.6	ns
Daily feed intake, kg/d	2.31	2.31	2.30	2.30	0.01	ns
Daily gain, g/d	809	804	824	826	28	ns
Feed conversion, kg/kg	2.86	2.88	2.80	2.79	0.10	ns
Carcass weight, kg	86.9	87.1	86.9	87.2	1.9	ns
Dressing percentage	76.0	75.8	75.4	75.6	0.5	ns
Lean meat percentage	59.7	60.0	60.2	60.0	1.5	ns

Conclusion

With these results, it can be concluded that tapioca meal can be used at a 30 - 35 % incorporation rate in amino-acid balanced diets without negative effects on growth, feed efficiency and carcass quality of growing – finishing pigs with a medium sanitary status. Further investigations should be done to study the effects of higher tapioca levels on performance of high productivity herds.

