

XTRACT® 6930 improves colostrum and milk quality of lactating sows, focus on omega-3 fatty acids

INTRODUCTION AND OBJECTIVES

The sow's diet and the composition of maternal body reserves in late gestation are correlated with milk composition during lactation. This is significant as the quality and yield of colostrum and milk dictates piglets' performance and vitality. XTRACT® 6930 is known to enhance feed digestibility, improve gut integrity and function, and to optimize immune modulation. As a result, sows fed XTRACT® exert enhanced body condition score and fertility, and better performance of their progeny. The objective of this study was to evaluate the effect of XTRACT® 6930 on the composition of sows' colostrum and milk.

MATERIALS AND METHODS

Experimental Design

- Experimental farm in collaboration with Writtle Agricultural College, United Kingdom
- 12 sows in their 3rd parity (Landrace x Large White), housed in individual farrowing crates then pens with semi-slatted floor from day 108 of gestation (c.a. 1 week before farrowing), and randomly allocated to 2 treatments:
 - Control: standard commercial lactation diet
 - XTRACT®: standard commercial lactation diet supplemented with 150 g/t XTRACT® 6930
- Cross-fostering performed 24 h after farrowing to standardize litter size within treatments.
- Feeding program:
 - Until day prior to parturition: 3 kg/d of feed
 - Day of farrowing: 1 kg of feed
 - 1st week of lactation: linear increase of feed distribution (semi *ad libitum*)
 - From 2nd week of lactation until weaning: feed *ad libitum*
- Lactation diet based on barley, wheat, low glucorape, bakery by-product, soya, vegetable oil.

Chemical composition (%)		Fatty acid composition (g/100 g)			
Crude Protein	15.5%	Myristic (C14:0)	0.66	Oleic (C18:1 n-9; ω-6)	29.49
Crude Fat	5.0%	Palmitic (C16:0)	18.19	α-linolenic (C18:1 n-3; ω-3)	3.88
Crude fiber	57.5%	Stearic (C18:0)	3.45	Eicosapentanoic (C20:5 n-3; ω-3)	0.06
Ash	5.2%	Palmitoleic (C16:1)	0.46	Docosapentanoic (C22:5 n-3; ω-3)	0.15
Moisture	13.8%	Linoleic (C18:1 n-6; ω-6)	36.69	Docosahexanoic (C22:6 n-3; ω-3)	0.16
		Arachidonic (C20:4 n-6; ω-6)	0.56		

Measurements, per sow

- Colostrum collected within 12 hours after farrowing, then milk obtained after 7, 14 and 21 days of lactation
- Analysis of colostrum and milk composition and fatty acids profile

Statistical analysis

- Mixed procedure of XL-Stat with repeated measures, using the treatment as a fixed effect and day of lactation as the repeated factor.

TECHNICAL BULLETIN

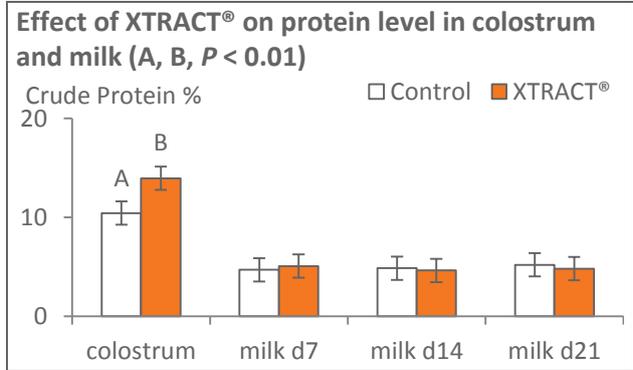
RESULTS AND CONCLUSION

Sows' dry matter intake during lactation was similar in both experimental treatments (mean: 9.5 kg/hd/d).

Then, the levels of fat, lactose and ash in colostrum and milk were similar among the two groups.

Milk protein level was higher in colostrum than in milk ($P < 0.01$).

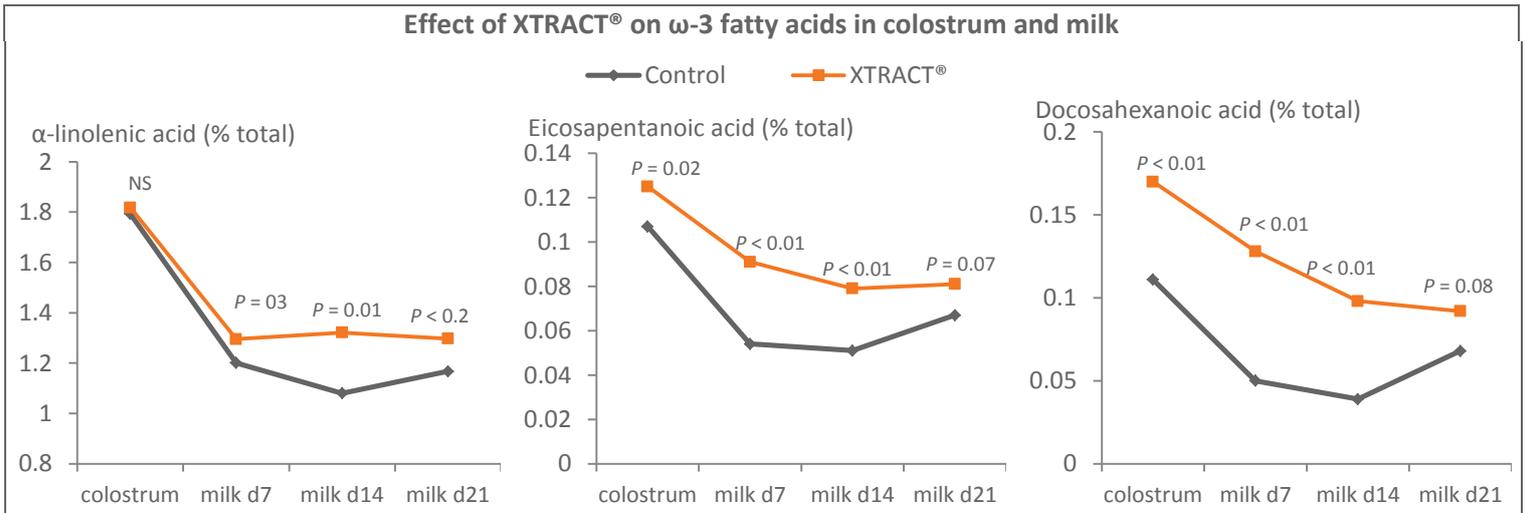
XTRACT® tended to enhance milk protein percentage ($P = 0.17$), especially in colostrum, where the supplementation increased by 27.9% the level of crude protein ($P < 0.01$, see figure).



As for protein, the fatty acids profile was significantly affected by the day of lactation. Colostrum was richer in fatty acids than milk at days 7, 14 and 21 ($P < 0.01$).

XTRACT® supplementation also positively impacted this profile throughout lactation. XTRACT® did not affect the levels of ω -6 fatty acids (mean: 16.7%, $P = 0.96$), but increased by 12.2% the proportion of ω -3 fatty acids (1.47 vs 1.65 respectively for the control and XTRACT® groups, $P < 0.01$).

Effect of XTRACT® on ω -3 fatty acids in colostrum and milk



Omega 3 fatty acids are polyunsaturated fatty acids that all derive from α -linolenic acid, considered as essential in swine and other species as it cannot be synthesized and must then be provided by the diet.

An increased supply of ω -3 fatty acids to suckling piglets was reported to exert a positive effect on their vitality, growth and survival¹. This explains how the supplementation of XTRACT® to lactating sows' diets improves performance and health of their progeny during the suckling period.

XTRACT® 6930 fed to the sows improves the nutrient supply to suckling piglets through more protein in colostrum and more ω -3 fatty acids provided to the progeny all throughout lactation.

¹ Bee, 2000, Journal of Nutrition