



Effects of different fat sources on the apparent total tract digestibility of energy in piglets

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Introduction

Oils and fats play an important role in animal nutrition. They serve as an energy source, storage medium, synthesizes of membranes, absorption, synthesis and transport of hormones and vitamins. There are many advantages to include so-called dry feed fats in the diets, such as whey-fat concentrates or spray-cooled fat powder. Due to the reduced ability of weaned piglets to digest fat, the fat in the piglet diet must be of highest quality and be easy to digest. Dry feed fats are often attested to be less digestible. As they differ in composition and particle structure, this has a significant influence on digestibility. Therefore, the aim of the present study was to examine the effects of different fat sources on the apparent total tract digestibility (ATTD) of energy in young piglets.

Material und Methods

- Based on health status and body weight (BW), 24 male castrated piglets (DanBred x Pietrain, approx. 28 days old) with an initial BW of 12.8 ± 0.4 kg were selected
- The animals were separated into four treatment groups of six individuals each and housed in a temperature-controlled environment
- Dietary treatments:
 - T1: basal diet + 3% soybean oil
 - T2: basal diet + 6% whey fat concentrate
 - T3: basal diet + 3% **BEWI-SPRAY® 99 L**
 - T4: basal diet + 3.75% **BEWI-PIG® 80 L**
- The experimental diets were pelleted in order to allow a precise monitoring of feed intake and administered twice daily
- A quantitative collection of feces was conducted in the 5-day collection phase after a 12-day adaption phase to the diets

Table 1: Feed ingredients and calculated composition of the basal diet (commercial based, as is)

diets	%	calc. nutrients	%
Wheat	32.20	ME, (MJ/kg)	13.80
Corn	20.00	NE, (MJ/kg)	10.30
Barley	17.50	Ash	5.30
Soybean meal (46 CP)	21.50	Crude protein	19.20
Rapeseed meal	5.00	Crude fat	3.00
Soybean oil	0.50	Crude fibre	3.20
L-Lysine (HCl)	0.50	Lysine	1.28 (1.14)
Methionine	0.11	M+C	0.75 (0.66)
L-Threonine	0.15	Threonine	0.80 (0.69)
L-Tryptophan	0.02	Tryptophan	0.23 (0.20)
Calcium carbonate	1.02	Valine	0.84 (0.72)
MCP	0.70	Calcium	0.75
Sodium chloride	0.30	Phosphorus	0.55
Premix (vit/min)	0.50	dig. phosphorus	0.26

Results

Dietary treatment	DM [g/kg]	Ash [g/kg DM]	CP [g/kg DM]	CF [g/kg DM]	EE [g/kg DM]	Ca [g/kg DM]	P [g/kg DM]	GE [MJ/kg DM]	ATTD GE [%]
T1 Soybean oil	857	61	235	58	57	8.5	7.3	19.0	86.3
T2 Whey-fat concentrate	851	60	226	54	58	8.3	7.1	18.8	84.6
T3 BEWI-SPRAY® 99 L	855	61	229	58	54	8.3	7.1	19.0	84.1
T4 BEWI-PIG® 80 L	853	60	240	56	53	8.1	7.1	18.9	83.4

DM, dry matter; CP, crude protein; CF, crude fibre; EE, ether extract; Ca, calcium; P, phosphorus; GE, gross energy; ATTD, apparent total tract digestibility

Conclusion

- At 84.1% and 83.4%, respectively, the ATTD of energy of **BEWI-SPRAY® 99 L** and **BEWI-PIG® 80 L** was on the same level as soybean oil and whey-fat concentrate; no significant differences could be determined.
- The results of the digestibility study show that even young piglets can digest the energy from **BEWI-SPRAY® 99 L** and **BEWI-PIG® 80 L** to realize a high degree in performance (= growth).
- The refined and hydrogenated vegetable fats, which are also enriched with lecithin, are therefore an optimal component for closing the energy gap, especially in piglet rations and diets for lactating sows, with highly energetic and easily digestible ingredients.

Literature

Duran-Montgé et al., 2007. Fat and fatty acid digestibility of different fat sources in growing pigs. *Livestock Science* 109, 66-69.
 GfE, 2005. Standardised precaecal digestibility of amino acids in feedstuffs for pigs – methods and concepts. In: Martens, H. (Ed.), *Communications of the Committee for Requirement and Standards of the Society of Nutrition Physiology*. Proc. Soc. Nutr. Physiol., vol. 14, pp. 185–205.
 Kerr et al., 2015. Characteristics of lipids and their feeding value in swine diets. *Journal of Animal Science and Biotechnology* 6:30.
 Weng, R.C., 2017. Dietary fat preference and effects on performance of piglets at weaning. *Asian-Australasian Journal of Animal Science* 30, 6:834-84211.

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