



Replacement of fish meal by soy protein concentrate may have economical and environmental benefits

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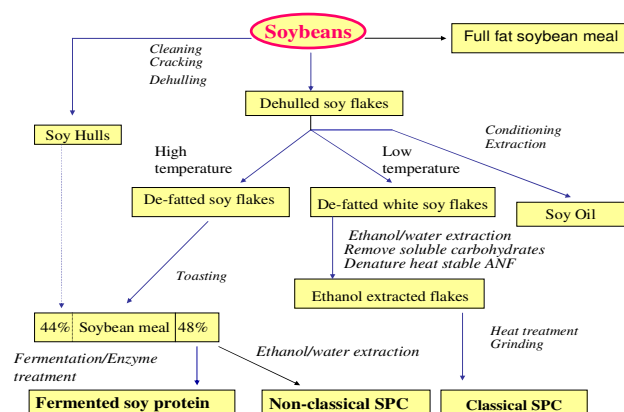
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Introduction

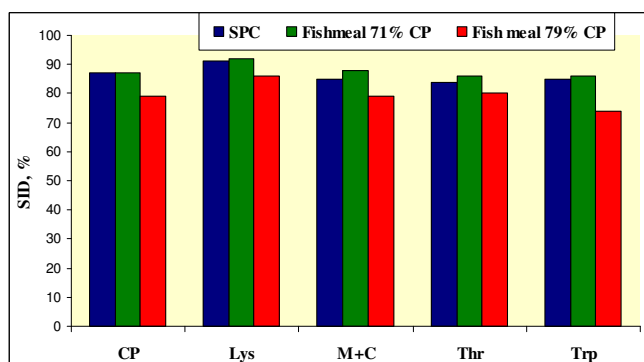
Fish meal (FM) is included at levels up to 10% in piglets weaner diets and 2-10% in poultry feed. While in aqua-feed, fish meal is included at 5 to 35% depending on fish species. Fish meal availability is limited and this has led to a rapid increase in fish meal prices. It is expected that the fish meal price will remain at a high level in the near future.

Highly processed classical soy protein concentrate (SPC) is characterized by high protein content, high AA digestibility, low indigestible carbohydrates content, low soy anti-nutritional factors. High quality SPC is a good alternative to fish meal in the feed for young animals. Literature studies show that replacement of fish meal by SPC can have economical and environmental benefit.

Soy protein production process



Digestibility of SPC vs. fish meal in weaning piglets



Mosenthin et al., 2006. SID: Standard Ileal Digestibility

Growth performance in weaning piglets

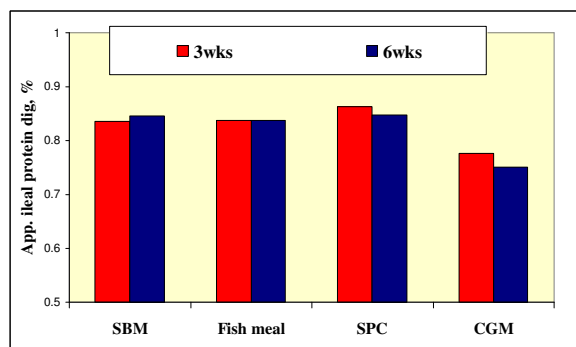
Item	SPC	Plasma	Blood	Egg	Fish	Wheat
Gain, g/d	308 ^a	290 ^{ab}	268 ^{bc}	259 ^b	304 ^a	272 ^{bc}
Feed, g/d	304	304	268	277	308	281
F/G	0.98 ^b	1.04 ^{ac}	0.99 ^{bc}	1.08 ^a	1.01 ^{bc}	1.02 ^{abc}

*Pigs were weaned at 14-days weighing 4.2 kg, in a 14 days study (Nessmith et al. 1996)
a,b,c – means on the same row with different letters differ (P<0.05)

Replacing FM by SPC has economical benefit

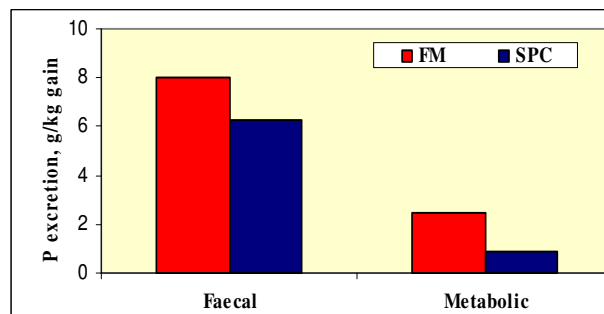
- In piglets, studies show that replacing fish meal by SPC can maintain or improve growth performance
- In fish and shrimp feed, partial replacement of fish meal by SPC can improve growth rates and feed efficiency

Digestibility of SPC vs. fish meal in 3 & 6 wks broilers



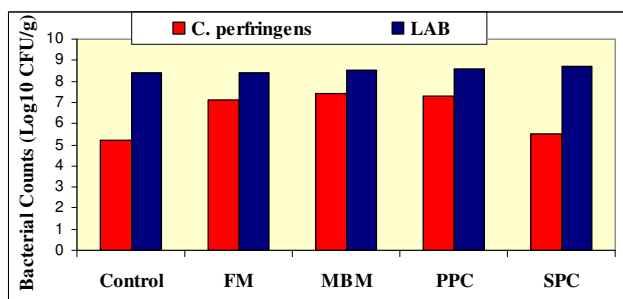
Yu et al. 2002; CGM: corn gluten meal

Replacing FM by SPC has environmental benefit



Source: Storebakken et al. (2000). In fish.

Replacing FM by SPC improves intestinal health



Wilkie et al., 2005. In broiler chickens. LAB: lactic acid bacteria. FM: fish meal; MBM: meat bone meal; PPC: potato protein concentrate

Summary

- SPC is highly processed soy protein, characterized by high protein content, low indigestible carbohydrates and low soy anti-nutritional factors
- SPC has AA profile and digestibility comparable to or better than fish meal
- SPC has low non protein nitrogen content that is beneficial for intestinal health
- Replacing fish meal by SPC can maintain or improve growth performance in piglets and fish
- SPC replacing fish meal can reduce P and N excretion