IAFMM FISH MEAL FLYER

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# WEST GERMAN TRIAL SHOWS VALUE OF FISH MEAL IN DIETS OF EARLY WEANED PIGS

## SUMMARY

An early weaned piglet (9kg starting weight) trial conducted in Bavaria, West Germany showed that piglets fed a fishmeal/soyabean meal/cereal diet were superior in performance compared with three treatment groups of piglets fed soyabean/cereal diets, two of which were supplemented with synthetic amino acids. These results confirm other similar results obtained at other centres in Germany and elsewhere.

## Introduction

Early weaned pigs (pigs weaned at five weeks of age, or younger) are sensitive to the type of dietary proteins fed. This sensitivity can be explained in part by the piglet's immune system not being able to distinguish fully between protein from harmful bacteria and feed proteins (see Fish Meal Flyer No 3). Milk protein or fish meal gives a lower adverse allergic response than soyabean meal protein. Thus fish meal is superior to isolated soyabean proteins and soyabean meal as replacement for milk protein at early weaning ages (see IAFMM Technical Bulletin No 17). Furthermore the essential amino acids in fish meals have been shown to have higher ileal digestibility than those in soyabean meal (77% v 75% See Fish Meal Flyer No 5). The purpose of the trial reported here was to compare soyabean meal as a main protein source with a fish meal/soyabean meal mixture in diets for young pigs under West German farm conditions.

## Methods

Four groups of piglets (either 30 or 60 animals per group) weighing approximately 9kg per animal were fed a soyabean/cereal diet (Group I), a soyabean/cereal diet supplemented with amino acids (Groups III and IV), or a fish meal/soyabean meal/cereal diet (Group II). The composition and analyses of the diets are given in table 1. The trial was conducted by Dr Lindner at Grub, Bavaria (Bayerische Landensanstalt Für Tierzucht). The fishmeal was analysed to contain 66.3% protein, 5.2% lysine, 2.4% methionine and cystine and

2.7% threonine. The soyabean meal was analysed to contain 42.4%% protein, 2.4% lysine, 1.2% methionine + cystine and 1.7% threonine.

## Results

The results of the trial are summarized in table 2. The fishmeal group (II) grew at a significantly faster rate than the soyabean group (I), but the rates of growth were equal in the fish meal group and soyabean group supplemented with lysine and methionine (III). The diet received by this group (III) had a composition similar to that received by the fish meal group (II). However the fish meal group (II) had superior feed conversion compared with any of the soyabean groups, even those supplemented with amino acids.

## Conclusion

This practical trial carried out under West German farm conditions demonstrates the nutritional superiority of fish meal for early weaned pigs compared with soyabean meal, even when the latter is balanced with synthetic amino acids.

Table 1:

DIET COMPOSITION AND ANALYSIS

| Group | I | II | III | IV |
|---|---|---|---|---|
| Lysine (g/kg)feed (calc.) | 9.5 | 9.5 | 10.5 | 10.5 |
| Protein concentrate | Soya | Soya + synth.amino acids[1] | Soya + synth.amino acids[1] | Fishmeal + Soya |
| 1. Feed Composition (in %) | | | | |
| Wheat | 25.0 | 25.0 | 25.0 | 25.0 |
| Maize | 20.0 | 20.0 | 20.0 | 20.0 |
| Oats | 10.0 | 10.0 | 10.0 | 10.0 |
| Barley | 11.0 | 14.0 | 11.0 | 19.5 |
| Soyameal | 30.0 | 27.0 | 30.0 | 14.7 |
| Fishmeal | - | - | - | 8.0 |
| Mineral mix[2] | 4.0 | 4.0 | 4.0 | 2.8 |
| | 100.0 | 100.0 | 100.0 | 100.0 |
| 2. Nutrient Composition | | | | |
| ME, MJ/kg | 12.86 | 12.81 | 12.83 | 12.92 |
| GN | 717 | 715 | 714 | 722 |
| Crude protein g/kg | 201 | 202 | 210 | 207 |
| Lysine g/kg | 9.3 | 9.5 | 10.1 | 10.4 |
| Methionine + cystine | 6.4 | 7.1 | 7.3 | 7.0 |
| Threonine | 7.3 | 7.1 | 7.4 | 7.4 |

[1] containing L-lysine and DL-methionine

[2] contains per kg: 220g Ca, 75g P, 55g Na

Table 2:

GROWTH AND FEED CONVERSION

| Group | I | II | III | IV |
|---|---|---|---|---|
| Lysine (g/kg) feed (calc.) | 9.5 | 9.5 | 10.5 | 10.5 |
| Protein concentrate | Soya | Soya + synth.amino acids[1] | Soya + synth.amino acids[1] | Fishmeal + Soya |
| No. of animals | 63 | 32 | 31 | 64 |
| Weight (kg animal) | | | | |
| Start of trial | 9.0 | 9.0 | 9.1 | 9.0 |
| End of trial | 19.4 | 19.4 | 20.7 | 20.5 |
| Daily weight gain (g/animal) | 371[a2)] | 369 [a] | 413 [b] | 412 [b] |
| (relative) | (100) | (100) | (111) | (111) |
| Daily feed consumption[1)] | | | | |
| (kg/animal) | 0.71 [a] | 0.70 [a] | 0.78 [c] | 0.74 [b] |
| (relative) | (100) | (99) | (110) | (104) |
| Feed conversion | | | | |
| (kg/weight gain) | 2.04 | 2.01 | 1.97 | 1.92 |
| (relative) | (100) | (99) | (97) | (94) |

[1] n = 8 (Group I and II) cf n = 4 (Group II and IV)

[2] Significant ($p < 0.05$) differences between group values with different super-scripts