

# Amino acid digestibility in Joosten protein concentrates (JPC 56 & FMR Ω 3) in comparison with Peruvian Super Prime fish meal fed to weanling pigs

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**Joosten**  
young animal nutrition

*We care for the little ones*

## Introduction

High dietary levels of soybean meal are not well tolerated by weanling pigs. Animal protein sources such as fish meal (**FM**) are therefore usually included in diets fed to weanling pigs. However, animal protein can be connected with feed safety issues and shows a wide variety in quality, which is undesirable for young animals.

The Joosten protein concentrate 56 (**JPC 56**) and Fishmeal replacer omega 3 (**FMR Ω3**) are sources of vegetable high quality protein and amino acids (**AA**) designed for young animal nutrition. They highly value feed safety, promote gut health and have an excellent digestibility. In recent years, numerous in-vitro tests were performed, showing minimum protein digestibility levels of 95%. However, at this point, no data for in-vivo crude protein (**CP**) and AA digestibility have been reported for these products.

## Methods

Eight weanling barrows ( $11.8 \pm 0.5$  kg) were surgically fitted with a T-cannula in the distal ileum<sup>1</sup> and allotted to a replicated  $4 \times 4$  Latin square design with 4 diets and four 7d periods. Therefore, 8 replicate pigs were fed each diet.

In 4 dietary treatments\* each protein source was included as the sole source of AA:

- FMR Ω3
- JPC 56
- Super Prime fish meal (FM)
- N-free diet

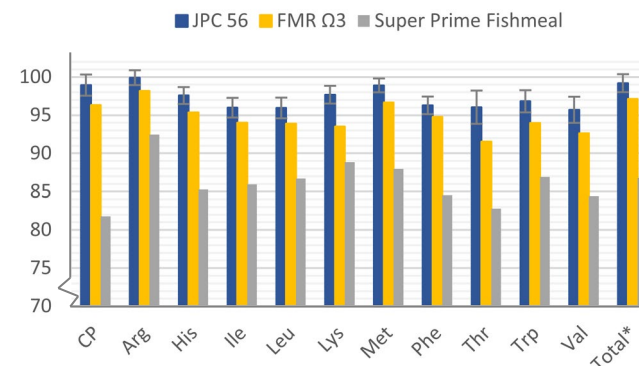
(to measure basal endogenous losses)

Ileal digesta were collected from canula<sup>1</sup> on d6 and 7, lyophilized and chemically analysed. From these data the apparent (**AID**) and standardized ileal digestibility (**SID**) for CP and AA<sup>2</sup> were calculated.

\*All diets contained 0.4% chromic oxide as an indigestible marker.

## Results

The CP for JPC 56, FMR Ω3 and FM were 55.4%, 58.1%, and 66.2% respectively. The AID of CP and all AA were lower ( $P < 0.05$ ) in FM compared with JPC 56 and FMR Ω3 with the exception of Ala, where no difference was observed. The SID of CP and all AA were the least ( $P < 0.05$ ) in FM compared with JPC 56 and FMR Ω3 (Figure) with the exception of Ala, where only JPC 56 had a greater ( $P < 0.05$ ) SID than FM.



Standardized ileal digestibility of CP and indispensable amino acids (AA) in JPC 56, FMR Ω3 and Super Prime Fish meal. All graph values are significant with FM ( $P < 0.001$ ). \*SID of all 17 (in)dispensable amino acids in total.

The results show an excellent in-vivo protein digestibility of Joosten Protein Concentrates, which confirming historical in-vitro data. SID of CP is **99.0%** and **96.3%** for JPC 56 and FMR Ω3 respectively, compared with 81.8% SID of CP for Super Prime Peruvian fishmeal ( $P < 0.001$ ).

## Discussion

The values for SID of AA in fish meal were intermediate between values published for North American fishmeal<sup>3</sup> and European fishmeal<sup>4</sup>. The SID values of CP for Joosten Protein Concentrates are higher compared to other available vegetable protein concentrates (Table) as well as SID values for most AA<sup>5</sup>.

|                             | SID (%)    |
|-----------------------------|------------|
| Enzyme-treated soybean meal | 85.2- 91.9 |
| Extruded soybean meal       | 86.2       |
| Soy protein concentrate     | 82.2- 89.0 |
| Fermented soybean meal      | 80.0-83.0  |
| Fermented rapeseed          | 70.6       |

## Conclusion

These results demonstrate that Joosten Protein Concentrates have superior crude protein and amino acid digestibility and are the preferred protein sources in young animal diets.

<sup>1</sup>Stein et al., 1998 <sup>2</sup>Stein et al., 2017 <sup>3</sup>NRC, 2102

<sup>4</sup>Sauvant et al., 2004 <sup>5</sup>Stein, 2016; Navarro et al., 2017; Pedersen et al., 2016

