

## USE OF PORCINE BYPRODUCTS AS FISH MEAL REPLACEMENT IN ONGROWING FEEDS FOR GILTHEAD SEABREAM: EFFECTS ON GROWTH, FILLET COMPOSITION AND IMMUNE STATUS

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Two porcine byproducts (hydrolyzed protein, PEPTEIVA and spray-dried plasma, APPETEIN, APC Europe) were used to substitute 5% fishmeal (FM) in a 48% protein-rich diet (7% FM) for gilthead seabream. Fish (initial weight = 60g) were on-grown for 3 months in 4x replicated 450L tanks connected to a recirculation system (IRTamar<sup>®</sup>). At the end of the trial, samples of different organs (fillet, liver, plasma and skin) were taken to study the effect of these products on the composition and immune status of the fish. Growth in weight and length was also recorded.

The results obtained showed a significant positive effect on the growth (Table 1) of the fish although no differences could be found in terms of proximal and fatty acid composition of the fillet (Table 2) or in the plasma immune status (Fig 1)

	<i>Final weight (g)</i>	<i>Final size (LS, cm)</i>	<i>Fulton Index (K)</i>
<b>Diet 1 (control)</b>	173.8 ± 6.0 b	18.7 ± 0.2	2.65 ± 0.1
<b>Diet 2 (Porcine plasma)</b>	180.0 ± 4.4 a	19.0 ± 0.3	2.64 ± 0.2
<b>Diet 3 (Porcine protein)</b>	182.2 ± 8.4 a	19.0 ± 0.1	2.67 ± 0.3

Table 1.- Results in growth in weight and length and Fulton condition factor, letters indicate significant differences (ANOVA, P < 0.001).

	<b>Diet 1 Control</b>	<b>Diet 2 Porcine plasma</b>	<b>Diet 3 Porcine protein</b>
Water (%)	70.89±0.49	70.19±0.86	71.71±0.45
Protein (% DW)	62.00±3.01	61.44±2.54	69.28±2.81
Carbohydrates (% DW)	1.33±0.25	1.56±0.14	1.29±0.12
Lipids (%DW)	12.69±1.32	13.90±2.28	12.27±1.78
Ash (%)	2.12±0.23	2.49±0.34	2.53±0.55
Total Fatty acids (mg/g lipids)	735.05±72.65	665.76±12.96	693.32±84.14
Fatty Acid profile (% Total)			
Total Saturated	25.35±0.63	25.60±0.28	24.35±3.67
Total Monounsaturated	30.46±1.47	31.55±1.21	29.04±4.92
20:4n-6 (ARA)	0.82±0.05	0.87±0.16	0.76±0.31
Total n-6 PUFA	10.52±0.20	11.26±0.24	10.78±1.73
20:5n-3 (EPA)	8.00±0.38	8.12±0.32	7.31±1.29
22:6n-3 (DHA)	13.64±0.75	14.14±0.90	12.78±2.56
Total n-3 PUFA	25.96±1.41	26.38±1.02	24.04±3.97
Total PUFA	36.48±1.57	37.64±1.25	34.82±5.65

Table 2.- Results in proximal (% dry weight) and fatty acid composition (% of total fatty acids) of the fillet at the end of the study

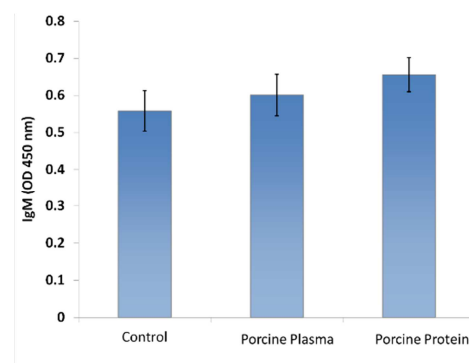


Fig 1.- Results of immunoglobulin in the serum of the fish at the end of the trial.

No significant variations were detected in the immunoglobulin M levels (Fig. 1), natural haemolytic complement activity and bactericidal activity against *Vibrio anguillarum* in the serum from fish fed the different experimental diets.

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