AQUA 2018 - Meeting Abstract

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EFFECT OF AUTOCLAVING PROCESS AND ENZYMATIC HYDROLYSIS OF OKARA (BYPRODUCT FROM SOY BEVERAGE) ON GROWTH OF NILE TILAPIA *O. niloticus*

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Among plant protein ingredients, soybean meal has high nutritional value and is the most widely used in the aquaculture industry. On the other hand, the consumption of soy products increases worldwide, either whole or as an ingredient for soy beverage. Currently, the food industry generates large amounts of byproducts, such as okara, obtained from production of soy beverage. This byproduct is often discarded, but okara can still be a valuable source of nutrients and natural antioxidants for animal nutrition. In addition, several processing techniques, like enzymatic hydrolysis, can improve the nutrient bioavailability of okara. On the other hand, a thermal treatment, such as autoclaving, can eliminate antinutritional substances that soybean contains and often limit its use. So, the present study was conducted to evaluate the potential use of different processed okara meals, as an alternative protein sources in Nile

Tilapia (*O. Niloticus*) juveniles. The okara was used after enzymatic hydrolysis, using *Cynara cardunculus* enzymes- CYOK or autoclaving process- AOK (1 atm, 121ºC and 15 min). Both processed okara were dried at 65 ºC until constant weight and included at 10 and 20% in isonitrogenous diets for Nile tilapia, at the expense of soybean meal. Diets were fed to triplicate groups of fish during 10 weeks. At the end, growth performance and nutrient utilization was evaluated. In general, the diets were well accepted by Nile tilapia, resulting in similar voluntary feed intake and feed conversion ratio among dietary treatments. The results obtained showed that all groups of Nile Tilapia increased 6-fold the initial weight. Furthermore, the final body weight, length and the overall growth performance (SGR) of the fish were similar among the different experimental diets. The dietary inclusion of different okara meal (autoclaved or hydrolysed) did not affect fish final whole body composition nor nutrient gain (Table 1). The present work demonstrated that it is possible to include up to 20% okara meal in diets for Nile Tilapia without major effects on growth, nutrient utilisation or body composition.

Table 1. Final growth performance and whole body composition of Nile tilapia fed the experimental diets for 10 weeks.

	CONTROL	AOK20	CYOK10	CYOK20
Growth				
Final body weight (g)	110.6± 4.5	99.4 ± 6.1	107.3 ± 5.1	102.2 ± 5.0
SGR	2.2 ± 0.1	2.1 ± 0.1	2.2 ± 0.1	2.1 ± 0.1
FCR	1.1 ± 0.1	1.1 ± 0.3	1.1 ± 0.1	1.1 ± 0.0
Whole body composition (% wet weight)				
Dry matter	28.0 ± 0.2	27.4 ± 0.4	26.9 ± 0.8	27.2 ± 0.7
Crude protein	16.3 ± 0.6	15.6 ± 0.5	15.8 ± 0.4	15.7 ± 0.7
Crude fat	8.0 ± 0.7	7.9 ± 0.5	7.3 ± 0.3	7.8 ± 0.4
Gross energy (kJ g^{-1})	6.8 ± 0.1	6.7 ± 0.2	6.4 ± 0.1	6.6 ± 0.2

AOK10 and AOK20 – diets with 10 and 20% autoclaved okara meal, respectively; CYOK10 and CYOK20 - diets with 10 and 20 % of okara hydrolysed by *Cynara cardunculus* enzymes meal, respectively.

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