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## Evaluation of Pea Protein Concentrate as Dietary Protein Source for Tilapia (*Oreochromis niloticus*) Fingerlings

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### Abstract

A feeding trial was conducted to evaluate the effect of fish meal replacement by pea (*Pisum sativum*) protein concentrate on the growth performance of Tilapia (*Oreochromis niloticus*) fingerlings (initial weight: 2.3 g ± 0.08 g). Four feeding groups were fed with isonitrogenous diets (crude protein: 42.3% ± 0.3 in dry matter) varying only in their protein sources for 56 days at a level of 5% biomass/d. Fish meal based protein content of experimental diets was substituted with 0% (diet 1 = control group), 30% (diet 2), 45% (diet 3) and 60% (diet 4) pea protein. Performance test of Tilapia fingerling was assessed by comparison of weight gain (WG), specific growth rate (SGR) and feed conversion ratio (FCR). The feeding groups (in triplicate) were reared in the tanks of two similar recirculation units

Highest individual weight gain (21.4 g ± 0.78 g) and SGR (4.2%/d ± 0.11%/d) was observed in Tilapia fed diet 1, followed by fish fed diet 2 (19.1 g ± 0.63 g; 4.0 %/d ± 0.02 %/d), diet 3 (16.7 g ± 1.30 g; 3.8 %/d ± 0.11 %/d) and diet 4 (16.2 g ± 0.25 g; 3.7 %/d ± 0.04 %/d).

Furthermore, feed conversion was most efficient in fish fed diet 1 (0.9 ± 0.04) compared to diet 2 (1.0 ± 0.01), diet 3 (1.1 ± 0.03) and diet 4 (1.1 ± 0.01). Although, fish fed diet 1 (containing 100% fish meal protein) showed best performance, inclusion of 30% pea concentrate protein resulted in growth rates, which did not differ significantly from diet 1. Feeding Tilapia fingerlings with higher amounts of pea protein concentrate (45% or 60% pea protein) yielded in lower growth without significant differences between each other. The results suggest that it is possible to replace up to 30% of fish meal protein without adverse effects on fish performance. Nevertheless, higher amounts of pea concentrate led to decreased but still sufficient growth of Tilapia fingerlings.

**Keywords:** Fish meal replacement, growth performance, pea protein, tilapia