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Performance of *Cyprinus carpio* (var. *communis*) Fingerlings Fed on Diets Containing Water Washed Neem (*Azadirachta indica*) Seed Cake

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Abstract

Neem (*Azadirachta indica*) seed cake (NSC) has a high crude protein (CP) content that makes it a potential fish feed ingredient. This study aimed at assessing the effect of water washed neem seed cake (WWNSC) supplementation in the diets of *Cyprinus carpio* fingerling on their growth, feed intake, nutrient utilisation and change in body composition.

Four iso-nitrogenous diets were prepared using fishmeal, maize, rice polish, peanut cake, oil and a vitamin-mineral mixture. NSC was processed for detoxification through water washing. To the basal diets WWNSC was supplemented at 0 (Control) (diet 1), 50 g (diet 2), 100 g (diet 3) and 150 g (diet 4) kg⁻¹ and this supplementation substituted about 0, 7, 14 and 21 % of dietary CP content of plant origin. Twelve groups of ten *Cyprinus carpio* fingerlings in each group with an initial biomass of 101 g (avg. 10.1 ±0.15 g) were stocked in 35 l fibreglass tanks. The diets were hand fed to satiation twice daily, to triplicate groups of fingerlings. At the end of 42 days experimental feeding final biomass in each of the tanks was recorded, fish were killed, homogenised and analysed.

The final biomass that was attained by the fingerlings fed diet 1 (145 g) and diet 2 (144 g) were similar, and both were significantly higher ($p < 0.05$) than that of those fed on diet 3 (108 g) and diet 4 (108 g). During study, the daily dry matter intake per 100 g⁻¹ body weight of fish fed diet 1 and diet 2 was about 17% higher than that of fish fed diet 3 and diet 4. There was a decrease ($p < 0.05$) in specific growth rate (SGR) and protein efficiency ratio (PER) together with a depressed feed conversion ratio (FCR) with increased dietary incorporation of WWNSC, beyond 50 g kg⁻¹. The fingerlings accumulated increasing moisture as well as protein and decreased lipid in their whole body with feeding WWNSC incorporated diets. The study indicated that WWNSC could be incorporated at 50 g kg⁻¹ in the diet of *Cyprinus carpio* fingerlings without affecting growth, feed intake and nutrient utilisation. It is advantageous to partially incorporate such abundantly available cheap feed stuffs in the diet of fish to mitigate the chronic shortage of costly oil cakes in developing countries.

Keywords: *Cyprinus carpio*, feed intake, neem seed cake, nutrient utilisation