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Effect of Dietary Protein Restriction on the Growth of Snails of the Species *Archachatina Marginata*

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Abstract

The effect of food restriction on compensatory growth was studied on giant African snails of the species *Archachatina marginata* (Swainson 1821). It aimed, to determine the ability of captive-bred giant African snails of the species *Archachatina marginata* to efficiently use food and nutritional resources, based on the phenomenon of compensatory growth. A total of 90 snails, with an average live weight of 52.48 ± 9.03 g and an average shell length of 6.83 ± 3.38 cm, were randomly divided into three batches of 30 individuals in semi-buried pens made of cinder block and fine mesh screen. The snails were fed for an initial period of 70 days with rations containing 20.26 % crude protein for the control lot (I), 17.18 % and 14.43 % crude protein for lots II and III respectively. At the end of each feeding period, eight snails from each batch were randomly selected and slaughtered. The results obtained showed that the snails displayed at the end of the feeding restriction period a mean shell length of 8.1 ± 0.54 cm, 8.11 ± 0.43 cm and 8.13 ± 0.5 cm ($p > 0.05$) for a mean live weight of 79.6 ± 7.3 g, 68.9 ± 11.22 g and 66 ± 10.66 g ($p < 0.05$) for batches I, II and III respectively. The average daily dry matter intakes, as well as the average feed conversion ratios were 1.04 ± 0.12 g, 1.09 ± 0.13 g and 1.13 ± 0.14 g ($p > 0.05$), as well as 58.28 ± 15.41 , 103.30 ± 32.07 and 129.30 ± 30.86 ($p < 0.05$) for lots I, II and III respectively. The average carcass yields were $38.70 \pm 3.12\%$; $30.35 \pm 2.03\%$ and $28.30 \pm 1.26\%$ for lots I, II and III respectively. The feed conversion ratio and carcass yield were 56.24 ± 7.89 , 36.32 ± 35.28 and 35.28 ± 3.21 ($p < 0.05$) and $40.44 \pm 4.00\%$, $37.48 \pm 2.56\%$ and $36.55 \pm 1.75\%$ respectively. It is apparent from the present study that African giant snails of the species *Archachatina marginata*, previously subjected to dietary restriction, exhibited a more accelerated growth rate that allowed them to partially compensate for a significant growth delay.

Keywords: *Archachatina marginata*, carcass yield, compensatory growth, feeding, snail