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Effect of Supplementation with Fresh Citrus Pulp on Growth Performance, Slaughter Traits and Mortality in Guinea Pigs

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Abstract : Guinea pigs (Cavia porcellus) play prominent roles as experimental models for medical research and as pets. However, in developing countries like South America, the Philippines, and sub-Saharan Africa, the meat of guinea pigs is an economic source of animal protein for the poor and malnourished humans because guinea pigs are mainly fed with forage and do not compete directly with human beings for food resources, such as corn or wheat. To achieve efficient production of guinea pigs, it is essential to provide insurance against vitamin C deficiency. The objective of this research was to investigate the effect of the partial replacement of alfalfa with fresh citrus pulp (Citrus sinensis) in a diet of guinea pigs on the growth performance, slaughter traits and mortality during the fattening period (between 20 and 74 days of age). A total of 300 guinea pigs were housed in collective cages of about ten animals (2 x 1 x 0.4 m) and were distributed into two completely randomized groups. Guinea pigs in both groups were fed ad libitum, with a standard commercial pellet diet (10 MJ of digestible energy/kg, 17% crude protein, 11% crude fiber, and 4.5% crude fat). Control group was supplied with fresh alfalfa as forage. In the treatment group, 30% of alfalfa was replaced by fresh citrus pulp. Growth traits, including body weight (BW), average daily gain (ADG), feed intake (FI), and feed conversion ratio (FCR), were measured weekly. On day 74, the animals were slaughtered, and slaughter traits, including live weight at slaughter (LWS), full gastrointestinal tract weight (FGTW), hot carcass weight (with head; HCW), cold carcass weight (with head; CCW), drip loss percentage (DLP) and dressing out carcass yield percentage (DCY), were evaluated. Contrasts between groups were obtained by calculated generalized least squares values. Mortality was evaluated by Fisher's exact test due to low numbers in some cells. In the first week, there were significant differences in the growth traits BW, ADG, FI, and FCR, which were superior in control group. These differences may have been due to the origin of the young guinea pigs, which, before weaning, were all raised without fresh citrus pulp, and they were not familiarized with the new supplement. In the second week, treatment group had significantly increased ADG compared with control group, which may have been the result of a process of compensatory growth. During subsequent weeks, no significant differences were observed between animals raised in the two groups. Neither were any significant differences observed across the total fattening period. No significant differences in slaughter traits or mortality rate were observed between animals from the two groups. In conclusion, although there were no significant differences in growth performance, slaughter traits, or mortality, the use of fresh citrus pulp is recommended. Fresh citrus pulp is a by-product of orange juice industry and it is cheap or free. Forage made with fresh citrus pulp could reduce about of 30 % the quantity of alfalfa in guinea pig for meat and as consequence, reduce the production costs.

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