

Impact of Sunflower Oil Supplemented Diet on Performance and Hematological Stress Indicators of Growing-Finishing Pigs Exposed to Hot Environment

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Abstract : As homeothermic animals, pigs manifest maximum performance when kept at comfortable temperature levels, represented by a limit where thermoregulatory processes are minimal (18 - 20°C). In a stress situation where it will have a higher energy demand for thermal maintenance, the energy contribution to the productive functions will be reduced, generating health imbalances, drop in productive rates and welfare problems. The hypothesis of this project is that 5% starch replacement per 5% sunflower oil (SO), in growing and finishing pig's diet (Iberic x Duroc), is effective as a nutritional strategy to reduce the negative impacts of thermal stress on performance and animal welfare. Seventy-two crossbred males (51± 6,29 kg body weight- BW) were housed according to the initial BW, in climate-controlled rooms, in collective pens, and exposed to heat stress conditions (30 - 32°C; 35% to 50% humidity). The experiment lasted 90 days, and it was carried out in a randomized block design, in a 2 x 2 factorial, composed of two diets (starch or sunflower oil (with or without) and two feed intake management (ad libitum and restriction). The treatments studied were: 1) control diet (5% starch x 0% SO) with ad libitum intake (n = 18); 2) SO diet (replacement of 5% of starch per 5% SO) with ad libitum intake (n = 18); 3) control diet with restriction feed intake (n = 18); or 4) SO diet with restriction feed intake (n = 18). Feed was provided in two phases, 50-100 Kg BW for growing and 100-140 Kg BW for finishing period, respectively. Hematological, biochemical and growth performance parameters were evaluated on all animals at the beginning of the environmental treatment, on the transition of feed (growing to finishing) and in the final of experiment. After the experimental period, when animals reached a live weight of 130-140 kg, they were slaughtered by carbon dioxide (CO₂) stunning. Data have shown for the growing phase no statistical interaction between diet (control x SO) and management feed intake (ad libitum x restriction) on animal performance. At finishing phase, pigs fed with SO diet with restriction feed intake had the same average daily gain (ADG) compared with pigs in control diet with ad libitum feed intake. Furthermore, animals fed with the same diet (SO), presented a better feed gain (p < 0,05) due to feed intake reduce (p < 0,05) when compared with control group. To hematological and biochemical parameters, animals under heat stress had an increase in hematocrit, corpuscular volume, urea concentration, creatinine, calcium, alanine aminotransferase and aspartate aminotransferase (p < 0,05) when compared with the beginning of experiment. These parameters were efficient to characterize the heat stress, although the experimental treatments were not able to reduce the hematological and biochemical stress indicators. In addition, the inclusion of SO on pig diets improve feed gain in pigs at finishing phase, even with restriction feed intake.

Keywords : hematological, performance, pigs, welfare

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