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The effect of wheat bran, soybean hull and *Saccharomyces cerevisiae* yeast on performance, blood metabolites, immune system and improvement of broiler carcass quality

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Abstract

In order to determine the effect of non starch polysaccharides on performance, energy and protein efficiencies and carcass characteristics of broiler chicks, an experiment was conducted in three periods of starter, grower and finisher period, using 420 one-day old Ross 308 broiler chicks from both sexes in a completely randomized design with seven treatments, six replicates and 10 chicks per replicate. The experimental treatments were basal diet, diets containing 1 and 2% tenth percent of *Saccharomyces cerevisiae* yeast, diets containing 5 and 10 % of wheat bran, diets containing 3 and 6% percent of soybean hull. The results of the experiment showed that the control treatment had the lowest feed intake during the whole period of breeding ($p < 0.05$). The highest feed intake was related to 10 percent wheat bran and levels of 3 and 6 percent soybean hull ($P < 0.05$). Treatments containing 3 percent soybean hull showed the highest daily weight gain ($P < 0.05$) during the whole experiment. There is no statistical difference for the feed conversion ratio during the whole trial period. The highest relative energy efficiency related to yeast levels were compared to treatments containing wheat bran and soybean hull ($P < 0.05$). The lowest relative energy and protein efficiency was related to 10 percent wheat bran compared to control treatment ($P < 0.05$). The results of the experiment showed that the use of two tenths of yeast, 10 percent wheat bran and six percent soybean hull in the diet of broiler chickens is recommended.

The results of the experiment showed that keeping the chicken meat after slaughter the highest pH at all times and for malondialdehyde 24 hours after slaughter, related 6% soybean hull ($P < 0.05$). The highest amount of malondialdehyde was observed at 48 and 72 hours, and for dry matter and water storage capacity in 72 hours after slaughter, it was related to 5% wheat bran ($P < 0.05$). 3% soy hull treatment had the highest levels of malondialdehyde and free N at 24 and 72 hours compared to other treatments ($P < 0.05$). 10% of wheat bran and 6% soybean hull had the highest water holding capacity during 72 hours ($P < 0.05$). The results of data shown that *Saccharomyces cerevisiae* cell wall polysaccharides cause to reduce amount of pH, malondealdehyde, free nitrogen in compare to other source as wheat bran and soybean hull.

Key words: Broiler, Performance, Breast meat quality, *Saccharomyces cerevisiae* yeast, Soybean hull, Wheat bran..