EFFECT OF TRITICALE AND NON-STARCH POLYSACCHARIDES (NSP) DEGRADING ENZYMES ON COLOUR AND SENSORY CHARACTERISTICS OF BROILER MEAT

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Abstract. The trial was conducted to investigate the effect of triticale and non-starch polysaccharides (NSP) on the degrading enzymes supplementation to broiler chickens' performance, meat colour and sensory parameters. First of all, in the study, it was determined the amount of phenolic acids in the winter wheat variety *Zentos* and winter triticale variety *SU Agendus*, which were added to the broiler chickens' control and experimental diets. During a 5-week feeding experiment, 600 one-day-old Ross 308 broiler chickens were fed *ad libitum* with a crumbled wheat-soybean meal based diet (C group) supplemented with 15% triticale (T group) and 15% triticale with NSP degrading enzymes (E group; NSP degrading enzymes activities - endo-1.4-β-xylanase 11000 VU/ml and endo-1.4-β-glucanase (cellulase) 3200 DNS units/ml of feed). The sensory evaluation was performed according to a standardized sensory descriptive method. The analysis of phenolic acids in wheat and triticale, indicated that, out of the 5 phenolic acids the major part was made up of ferulic acid, which amounted to 535.71 µg/g DM in the wheat and with triticale – 601.04 µg/g DM. The other major phenolic acid was sinapic. Phenolic acids such as *p*-hydroxybenzoic and vanillic were found in minor quantities. The results of the feeding experiment with broiler chickens indicated that the addition of 15% triticale in combination with NSP degrading enzymes, have no effect on the broiler chickens' performance parameters. The usage of triticale with or without enzymes changed colour profiles of raw and thermally treated breast meat, but didn't have a significant effect on the thigh meat colour characteristics. E group raw and thermally treated breast meat had a higher value of lightness (L*) than the control group (53.89 vs. 48.10 and 83.15 vs. 81.78) ($P<0.05$). Raw and boiled breast meat from T and E groups showed higher values of redness (a*) and yellowness (b*) ($P<0.05$) in comparison to samples from the control group. Sensory evaluation of breast meat samples revealed that the tenderness in T group and colour intensity in E group had a tendency to decrease by 1.87 and increase – 1.25 respectively ($P<0.05$) compared to the control group. No other differences were observed between the control and analysed diets. Therefore, more additional study is required for better investigation of the effect of triticale and non-starch polysaccharides (NSP) degrading enzymes supplementation on broiler chickens' meat colour and sensory parameters.

Keywords: broiler chicken, triticale, enzyme, meat, colour, sensory analysis