**EFFECT OF GUANIDINOACETIC ACID SUPPLEMENTATION TO BROILER DIETS WITH AND WITHOUT ENERGY REDUCTION**

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Creatine plays an important role in cellular energy metabolism. Guanidinoacetic acid (GAA) is an amino acid derivate and natural precursor of creatine. Three trials were conducted to evaluate the effect of GAA supplementation on growth performance and breast meat yield (BMY) of broilers. Energy sparing effect of GAA supplementation in broiler diets with and without phytase was also investigated. In trial 1, treatment diets consisted of poultry by-product (PBP) inclusion at 0 and 5%, and GAA supplementation at 0 and 0.06%. In trial 2, dietary treatments included; 1. Control diet without energy reduction, 2. Negative control (-50 kcal AMEn/kg), and 3. Negative control + 0.06% GAA. In trial 3, dietary treatments included; 1. Control (standard diet with phytase supplementation), 2. Negative control (control -50 kcal AMEn/kg), and 3. Negative control + 0.06% GAA. Results of trial 1 showed that broilers fed diet supplemented with GAA had higher (P<0.05) body weight gain (BWG) and improved feed efficiency (FE) regardless of the PBP inclusion. Carcass yield and BMY were also improved (P<0.05) in birds fed GAA supplemented diets mainly with PBP inclusion. Results of trials 2 and 3 showed that GAA supplementation in energy reduced (50 kcal AMEn/kg) diets improved (P<0.05) BWG and FE. The BMY was significantly improved with GAA supplementation in trial 2 but results were non-significant in trial 3. In conclusion, GAA supplementation improved broiler live performance regardless of the PBP inclusion. Supplementation of GAA with and without phytase spares 50 kcal AMEn/kg energy with improvement in live performance.