

## A SNP in the BMP3 gene associated with carcass traits in broilers

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The bone morphogenetic proteins family (BMPs) plays role in osteogenesis and bone density. The BMP3 gene (bone morphogenetic protein 3) is included in this group but is structurally divergent from others, and acts as a negative regulator of bone formation. However, some of its function is still not completely understood. It is suggested that in addition to its role in the osteogenesis, the BMP3 gene may be also related to adipogenesis. Considering that this gene acts in the bone metabolism, it is a functional candidate to control bone integrity in chickens. Therefore, we evaluate the association of a SNP g>a in the BMP3 gene with carcass and bone integrity traits in broilers. A total of 670 animals from the paternal broiler line (TT), developed by Embrapa Swine and Poultry, was evaluated. The traits analyzed were: length, width, weight, percentage of dry matter, ash and resistance to bending of the femur and tibia, as well as weights of carcass, wings, wings stick, middle joint wings, thighs, thigh muscle, drumstick, drumstick muscle, breast, breast muscle, breast fillet, feet, back, and abdominal fat, and their respective yields. DNA from whole blood was extracted using the DNAzol reagent®. Primers used to amplify the region of interest were: F - 5'TGCTTGGAAGTCAAAGTGCTTGGG 3' and R - 5'TGCAATTCAGTGCTGTTCTGCTG 3'. The SNP *BMP3* g>a was genotyped by PCR-RFLP using Hpy188I restriction enzyme. Association analyses were performed using SAS with a model including the fixed effects of sex, family, hatch, SNP and the SNP by sex interaction, and the residual random effect. Additive and dominance effects of the SNP were tested. From the 670 animals genotyped, 150 (22,4%) had the GG genotype, 384 (57.3%) were GA and 136 were AA (20.3%). The *BMP3* SNP was associated with the weights of wings ( $p<0,04$ ) and wings stick ( $p<0,04$ ). The additive effect of the SNP on feet yield was significant ( $p<0,04$ ) only in females. Although this SNP was associated with wings and feet, which are cuts with a large bone component, direct association with bone integrity traits was not observed. Hence, other polymorphisms in this gene should be investigated.