

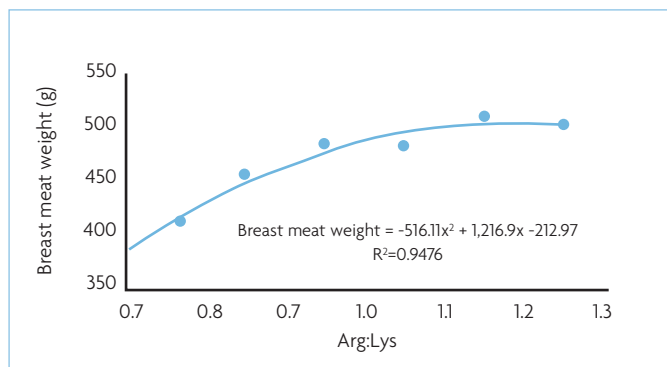


Fig. 2. Breast meat weight increased with increasing Arginine:Lysine ratio.

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well as in models of induced oxidative damage. The role of carnosine as a buffering agent in skeletal muscles is already known for more than 70 years accounting for about 40% of the total buffering capacity in the muscle.

In a broiler trial, it was demonstrated that supplementing dietary His increases the concentration of carnosine in breast muscle of 1-32 days old broilers effectively.

However, the source of dietary His seems to have a big impact on the carnosine enrichment in the meat.

In a 42 days rearing trial, a control

diet were tested against a diet with either 0.22% L-His supplementation or 4% spray-dried blood cells (SDBC) as a raw material with a naturally high His content. Both ways of dietary His enrichment led to a significant increased concentration of carnosine in breast meat tissues (Fig. 3).

However, carnosine content of animals fed with L-His was significantly higher than animals which received the SDBC, suggesting that crystalline His can be effectively metabolised by birds.

Notable, SDBC caused a loss in performance parameters probably because of a very high leucine concentration in SDBC contrary to L-

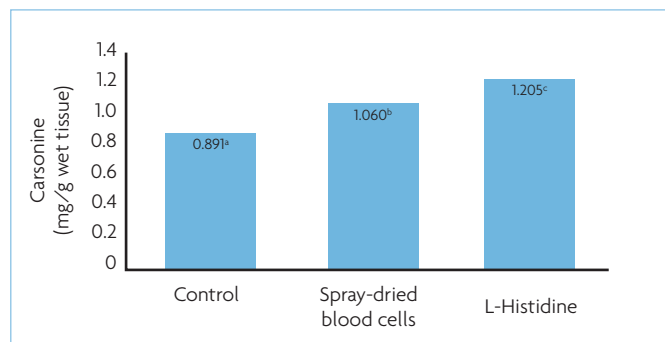


Fig. 3. Carnosine content (mg/g tissue) in broiler breast meat depending on dietary treatment. Adapted from Kopec et al., 2013).

His which maintained performance. A supplementation of L-His not only increases the carnosine content but can also improve other meat quality parameters.

Adding dietary His markedly increased total antioxidant capacity in the breast muscle and decreased malondialdehyde (MDA) concentration, which is a marker of oxidative stress.

Moreover, dietary supplementation of 1,950mg/kg L-His increased the pH 45 minutes postmortem.

Thus, His is a new tool for the industry to optimise the animal performance while producing a premium meat for the final meat consumers.

Conclusion

Several nutritional strategies can be implied to affect meat quality and amino acids are one of the tools to improve the physiochemical properties of meat. Supplementary amino acids such as L-arginine and L-histidine not only affect growth and health but can alter body composition and consequently beneficially influence meat quality. ■

References are available from the author on request