

Differences in meat quality between fast- and slow-growing chickens

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Poultry meat production is constantly increasing worldwide. It is based mainly on the use of fast-growing strains that are raised under intensive conditions. The use of these strains has been essential for the development of poultry meat production in response to a growing demand worldwide. While the competitiveness gains due to the use of these strains are obvious for the poultry meat industry, the benefits for consumers are less so. Indeed the improvement of the growth rate but also meat yield has led to significant changes in the muscle whose impact on meat quality is not negligible. Although these changes were initially positive for the technological and even sensorial quality of meat, they have led in recent years to the appearance of severe muscular integrity defects, which severely penalize the competitiveness of the poultry meat industry but also its image.

In this context, there is a growing interest in Europe for alternative production systems based on raising slower-growing poultry in less intensive conditions. These systems are highly developed in France with the production of “Label Rouge” or “organic” poultry, which currently supply 71% of the ready-to-cook chicken production and 16% of the chicken meat sold as cuts. The success of these systems is due to the sensory quality of the products, highly appreciated by the French consumers, but also to their positive image, in relation with the production methods that guarantees access to the outdoor of animals but also a limited use of medicinal inputs. Although these systems respond to the current societal demand in terms of animal welfare and food safety, they are at the same time uncompetitive and poorly adapted to the growing markets for cutting and processing. Indeed, meat yields of poultry produced under these conditions are low and animal physiological characteristics make the meat produced is not suitable for processing. For this reason, but also the growing rejection of consumers for intensive animal production systems, new systems based on the breeding of animals with intermediate characteristics to those of standard or slow-growing strains are developing in several European countries. Data on the quality of these products are still scarce, but given the current trends in the consumption of poultry meat, it is interesting to see how this production is positioned between the very intensive or extensive existing systems.

The main objective of this review is to present the knowledge acquired to date concerning the quality of chicken meat in the different production systems. In particular, we will describe how advances in growth rate and meat yields have affected muscle characteristics and what have been the consequences for meat quality but also animal welfare. We will also discuss the specific impact of the factors related to animal husbandry and animal feeding, and in a prospective way, the possibilities of improving quality in these different production systems by genetic selection or by adapting production practices.