

## Relationships between characteristics of muscle development in the pig carcass

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Nineteen characters, related in some way to one of the aspects of muscle development (by weight or volume) considered either on the whole carcass or at a specific anatomical level were measured in a sample (N = 10) of young boars of the *Pietrain* breed (about 100 kg live weight).

The variation of these characters, expressed by the coefficient of variation (CV), was very unequal. The most variable were those indicating the degree of fleshiness (muscle/bone ratio) of the thigh (CV of 22.8 p. 100 for the ratio of *M. semimembranosus* weight to femur weight and the  $P^{1/2} \cdot L^{-1}$  and  $P^{1/2} \cdot l^{-1}$  ratios suggested as indexes of general compactness (with P, carcass weight and L and l, total and partial carcass length respectively, were less variable (CV of 3.1 and 3.3 p. 100).

Study of distances between characters in a three-dimensional projection, made with the multivariate analysis of the centred data, showed that the different fleshiness characteristics of the thigh were very similar but located far from P and the *Longissimus dorsi* area. Their location strongly depended on the variation of the femur weight. The areas of muscle cross section were distributed throughout the projection space and each one was rather far from muscle weight.

The central location of the general compactness indexes suggests that, at a given anatomical level of the carcass, they can only give a partial information about the other specific traits of muscle development.

## Collagen content of muscles from boars of the *Pietrain* breed

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A total of 6 muscles from *Pietrain* pigs (N = 10 young boars of 100 kg live weight) : *Adductor* (AD), *Biceps brachii* (BB), *Semimembranosus* (SM), *Semitendinosus* (ST), *Supraspinatus* (SS) and *Triceps brachii caput laterale* (TB) were used to determine the ratio :

$$N = \frac{\text{Nitrogen hydroxyproline}}{\text{total nitrogen}} \times 10^2 \text{ accounting for the collagen content index.}$$

The  $C_i$  (collagen of completely trimmed muscle) and  $C_t$  (collagen of whole muscle) values were determined in the whole muscle and in the median slices.

The  $C_i$  values varied from 1.64 (AD) to 5.01 (SS).

The  $C_t$  values varied from 2.39 (AD) to 7.00 (BB).

The  $C_t/C_i - 1$  ratio was proposed as « aponevrosis content » of muscles. It varied from 0.27 (ST) to 0.91 (BB). There was a significant relationship between  $C_t$  and  $C_i$  which varied according to muscles. The  $C_t$  and  $C_i$  values of the median slices were not good indicators for those of the whole muscle. The variation of  $C_i$  values between animals was not significantly related to conformation score.

The *Pietrain*  $C_i$  values were lower than those of normal cattle muscles, but higher than those of « double-muscle » cattle.