



HAL
open science

Effects of various physical treatments on the destabilization of water-protein bonds in pork

B.L. Dumont, Eléonore Hudzik

► **To cite this version:**

B.L. Dumont, Eléonore Hudzik. Effects of various physical treatments on the destabilization of water-protein bonds in pork. *Annales de zootechnie*, 1983, 32 (3), pp.412-412. <hal-00888236>

HAL Id: hal-00888236

<https://hal.science/hal-00888236v1>

Submitted on 11 May 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

Weight losses at cooking represented 31.6 p. 100 in crossbreds and 30.5 p. 100 in *Pietrain*. Meat from crossbred animals was more fat and lost more weight, but remained more juicy. Even though the causes of the differences observed are still difficult to explain, several hypotheses may be put forward. The interest of production of « quality » meat by crossing *Chinese* breeds with our modern breeds is discussed.

Effects of various physical treatments on the destabilization of water-protein bonds in pork

B.L. DUMONT, Eléonore HUDZIK

*I.N.R.A., Laboratoire de Recherches sur la Viande, 78350 Jouy-en-Josas
France*

Samples of *Biceps femoris* from a group of *Pietrain* male pigs (N = 10 young boars of 100 kg live weight) were subjected to the following treatments for destabilizing the water-protein equilibrium in the muscle :

- A) compression after mincing,
- B) home grill cooking,
- C) cooking at 80 °C, 60 minutes in a dry atmosphere,
- D) cooking at 100 °C, 30 minutes in water,
- E) cooking at 105 °C, 60 minutes in salted water.

Weight losses (M) were calculated for the five methods. Dry matter losses (M) and protein losses (MA) were calculated only for B, C, D, E methods.

The losses were variable and the differences highly significant according to methods : for M, from 19.6 (A) to 46.4 (D), for MA, from 0.65 (B) to 2.47 (D), for MS, from 1.97 (B) to 3.81 (D).

Variation between animals depended on the physical methods used and the chemical component considered. Each method seemed to have a specific effect on the water-protein equilibrium in the muscle and led to a different grading of the meat.

Interrelations between some physico-chemical traits of muscles from *Pietrain* pigs of various conformation

J. BOUSSET, B.L. DUMONT

*I.N.R.A., Laboratoire de Recherches sur la Viande, 78350 Jouy-en-Josas
France*

Various physico-chemical parameters (TN, SN, sarcoplasmic protein nitrogen, isoenzyme 5 of the LDF, hem iron, pH, water binding capacity, as well as indexes of muscle development (muscle mass (M)/thigh bone mass) were measured in 5 muscles from a group of ten entire male pigs of the *Pietrain* breed.

Each muscle was characterized by a specific biophysico-chemical profile. Both samples of *Longissimus dorsi* (LD_{LS}, LD_{DI}) were almost similar and quite different from the *Adductor* (AD) - *Biceps femoris* (BF) group : *Semimembranosus* (SM) was in an intermediate position, but closer to *Longissimus dorsi*.

Multidimensional analyses using the method of centred data showed that the relationships between variables were almost similar for each muscle and that within the muscle, the composition was determined by the antagonisms between iron, the different forms of nitrogen and the proportion of the isoenzyme 5.

Whatever the muscle, effects of variations in the relative development of muscles were similar. Improvement in conformation led to a paler meat, with a lower pH and a lower water binding capacity.