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INFLUENCE OF GENETIC AND ENVIRONMENTAL FACTORS ON THE QUALITY OF PORK AND MEAT OF CHICKEN BROILERS

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The studies were conducted as part of the mEATquality project (Horizon 2020), aimed at analyzing the impact of genotype, housing conditions (availability and quality of space), and feed additives (feeds rich in fatty acids, fiber, plant dust) on the quality of pork and broiler meat. The experiments on fatteners were carried out in Poland, Denmark, Spain, and Italy. Broilers were analyzed in Poland and the Netherlands. A comprehensive analysis of the physicochemical quality of chicken breast muscles and pork loin was performed, including pH value, color parameters, texture, water retention capacity, basic chemical composition, and fatty acid profile. Experiments with the density of fatteners conducted in Italy, Denmark, and Poland showed that this factor does not affect pork quality, but the meat of fatteners kept indoors showed many significant differences compared to groups with access to a pasture. The quality of space, in the form of pigs' access to branches, balls, chains, and paper bags, was studied in Spain, Italy, and Denmark and did not contribute to significant changes in the quality of the loin.

A large number of meat quality parameters, including the fatty acid profile, significantly differed depending on the breed. This was confirmed by experiments conducted in Italy and Spain with the participation of native breeds, including Mora Romagnola, Cinta Senese, and Iberian. Furthermore, a strong interaction was demonstrated between genotype (Iberico vs Iberico x Duroc) and the management system (montanera vs sandy pasture). In nutritional experiments, the influence of the addition rich in polyunsaturated fatty acids on the fatty acid profile in pork was particularly pronounced.

Research on broiler chickens included factors such as genotype, the addition of greenery, stocking density, and enrichments (greenery in nets; perches). Studies conducted in Poland on Ross 308 chickens indicate that stocking density and access to perches do not influence meat quality. Conversely, Hubbard chickens exhibited varied meat quality, particularly in terms of texture parameters and water-holding capacity, depending on genotype and access to grassy runs.

In summary, for both fattening pigs and broilers, two key factors significantly differentiate meat quality. The most important factor is genotype, whereas in second place in terms of the level of changes is access to grassy runs or pastures.