

frequency from 2011 to 2014 (78.76%) and a progressive decrease with the lowest value in 2018 (61.79%). The frequency of the class R increased progressively from 2011 (12.43%) to 2018 (34.29%); moreover, class E showed a frequency steadily decrease in the eight-year period. These results suggest that, regardless of marks, beef cattle carcasses monitored in the period 2011–2018 by BovinMarche are showing a reduction in the profiles' convexity and in the round, back, shoulder muscles development.

## P108

### Poultry meat quality in antibiotic-free production has improved by natural extract supplement

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Farm sustainability is a key factor in animal production. In recent years, the consumers demand for products of animal origin coming from production chains certified for animal welfare has increased. Moreover, the institutions, have restricted antibiotic use in order to prevent the antibiotic resistance. For these reasons, antibiotic-free production chains are emerging. The search for innovative nutritional strategies able to support animal health and enhance product quality is required. Natural extracts containing polyphenols and seaweed are rich in bioactive compounds able to enhance animal health and product quality. The study was designed to investigate the effect of dietary supplementation with polyphenols and seaweed extract on meat quality parameters in Hubbard slow growth female chicken in antibiotic-free production. The animals were fed a control diet (C) and a diet integrated with 0.3% of polyphenols and seaweed extract (T1) and were slaughtered at 56 days of age at an average weight of 2.1 kg. Ten carcasses per treatment were randomly selected for the determination of meat quality parameters. Chemical parameters, pH, colour parameters and oxidative stability were determined at 0, 3, 7 days of refrigerated storage on the right breast and thigh. Data on chemical parameters were analysed by one-way ANOVA and the other parameters were submitted to a repeated measure ANOVA. In breast, protein and ash content resulted higher in T1 group than in control ( $p < .01$ ). The pH was affected ( $p < .001$ ) by storage time in thigh. The redness values were unaffected ( $p > .05$ ) by dietary treatments and storage time in both muscles. As expected, the lightness and yellowness values in thigh and breast were negatively affected by storage time ( $p < .001$ ). The oxidative stability resulted higher in thigh of chicken fed polyphenols and seaweed extract ( $p < .01$ ) than in control. As expected, storage time negatively affected ( $p < .001$ ) oxidative stability in both muscles. Overall these results suggest that in chicken

antibiotic-free production, dietary supplementation with polyphenols and seaweed extract, positively affects protein content in breast and protect muscle from oxidative processes, enhancing poultry meat quality parameters.

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## P109

### Effect of two sous-vide cooking methods on physicochemical characteristics of *Longissimus thoracis* muscle from pigs fed with or without extruded linseed

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Meat is recognised as a highly nutritive food. With cooking, the meat enhances its nutritional value and becomes more digestible. However, high cooking temperatures lead to several chemical modifications in meat. Therefore, there is an increasing interest in sous-vide cooking. The aim of this research was to study the influence of two sous-vide cooking methods on physicochemical characteristics of *Longissimus thoracis* (LT) muscle from 24 pigs fed with two different diets: control group (C) had a basal barley/soybean diet; in the linseed group (L), 5% of extruded linseed replaced the same amount of barley. At 24 h *post mortem*, LT muscles were sliced, vacuum sealed and stored at  $-18^{\circ}\text{C}$  until analysis. Samples were cooked in water bath at two different combinations of temperature and time: 'A'  $80^{\circ}\text{C}$  of the bath water as long as the core temperature of the pork reached  $70^{\circ}\text{C}$ ; 'B'  $60^{\circ}\text{C}$  for 15 h. After the cooking process, the samples were kept under refrigeration ( $2^{\circ}\text{C}$ ) for 24 h. The day after, cooking loss, colour, pH, microbial growth and tenderness were determined. Microbial growth was analysed also in the raw meat. Statistical analysis was performed by means of ANOVA, using the GLM procedure of SAS. Dietary treatment (C vs. L) and cooking condition (A vs. B) were used as independent variables. Dietary treatments did not produce significant differences in pH, colour, cooking loss and tenderness. Colour parameters were affected by cooking method:  $a^*$  values of the internal part of the sample and  $b^*$  values of the external part were higher for the samples cooked at  $60^{\circ}\text{C}$  ( $a^* 4.74$  vs.  $3.97$  for B and A, respectively,  $p < .05$ ;  $b^* 17.79$  vs.  $15.84$ ,