IMPACT OF ENVIRONMENTALLY FRIENDLY PRACTICES AND ANIMAL MANAGEMENT ON THE SENSORY PROFILE OF PREMIUM POULARD MEAT

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I. INTRODUCTION

The poulard, which is a castrated female chicken, can be considered a premium option in the poultry market. Its meat tends to be juicier and with a more pronounced taste than that of conventional chicken, making it appreciated by discerning consumers and in the realm of gourmet gastronomy [1]. However, these benefits may clash with current population ideals, as consumers not only seek products with excellent sensory quality but also care about animal welfare and its relationship with the environment [2]. Therefore, the objective of this study was to research the sensory profile of poulard meat raised under a semi-extensive regimen (more considerate with animal welfare), comparing a diet based on commercial feed with diets more environmentally friendly that included by-products or healthy seeds.

II. MATERIALS AND METHODS

To achieve these objectives, after being raised on a starter diet for 3 months, 40 poulards were randomly divided into 4 groups of 10 animals per group for different feeding types. The control feed (CO) consisted solely of corn, wheat, and peas. The other feeds included 5% beer bagasse (BB), 5% olive pomace (OP), or 5% flax seed (FS) in their formulation. The fattening period extended for an additional 3 months and was conducted under semi-free-range conditions. After 24 h post-slaughter, breast samples were extracted for sensory analysis. Cooking was carried out in a convection oven at 200 °C until the meat reached an internal temperature of 80 ± 1 °C. The sensory analysis adhered to the UNE-EN ISO 8589:2010 standard and engaged a panel comprising 20 participants. Ten participants were designated for quantitative descriptive analysis (QDA), while the remaining ten conducted an acceptability and preference test. QDA involved a structured scale ranging from 1 to 10 to assess odor, hardness, juiciness, and taste. Additionally, acceptability was evaluated using a 7-point hedonic scale, alongside preference assessments. The collected data underwent evaluation using a 2-way Mixed Model ANOVA, where both feed and panelists served as independent variables, for QDA evaluation and acceptability, while the evaluation of preference was performed using the Friedman test with XLSTAT (Addinsoft, NY, USA). Leas Square Means were separated using Duncan's *post hoc* test (significance level $P < 0.05$).

III. RESULTS AND DISCUSSION

Given that QDA is a detailed and reliable sensory method used to thoroughly evaluate a product across all its sensory attributes, the results obtained in this study (Figure 1) demonstrated that the inclusion of by-products such as BB or OP, as well as FS seed, did not have a significant effect ($P > 0.05$) on the sensory profile of high-quality birds like poulards. These results were similar to those obtained by Krawczyk et al. [1] who observed almost no influence after modifying the diet in poulards of different ages. This could be due to the relatively low inclusion (5%) of BB, OP, and FS, moderating their effect on the sensory parameters. Similarly to the findings in the QDA, the acceptance test revealed no significant differences among the poulard breast samples from those fed the CO diet and those from

the rest of the diets (i.e., BB, OP, and FS) (Figure 2A). This aligns with the notion that the inclusion of 5% of these by-products and this seed does not impact the sensory quality of the meat.

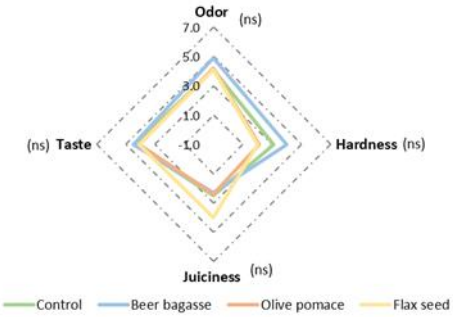

Figure 1. Effect of the diet on the sensory profile of poulard breast raised in semi-free-range conditions (ns: no significant difference, P > 0.05 (Duncan's test)).

Regarding the preference test (Figure 2B), FS poulards were selected as the preferred samples in 38% of cases, followed by OP poulards (37%). On the other hand, the BB and CC poulards obtained lower preferences (13 and 12%, respectively). However, the differences among the four diets were not significant (*P* > 0.05), once again highlighting the potential of these ingredients in poulard feeding.

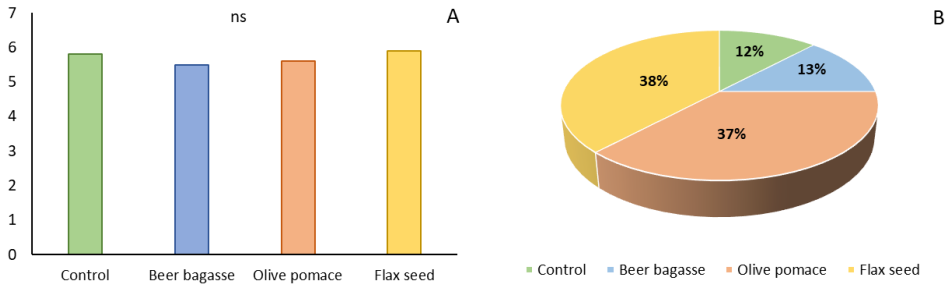

Figure 2. Effect of the diet on the acceptance test (A) and preference test (B) of poulard breast raised in semi-free-range conditions (ns: no significant difference, P > 0.05 (Duncan's test)).

IV. CONCLUSION

The obtained results suggest that the inclusion of BB, OP, and FS in the feeding of semi-free-range poulards did not significantly affect the sensory quality of the meat. These findings supported the potential of using these alternative ingredients in the poultry industry, offering high-quality products without compromising animal welfare or the environment, thus meeting current consumer demands.

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