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Development of decision-support systems based on physico-chemical and microbiological data for improvement the quality and safety of *Aloreña de Málaga* table olives

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Statement of the Problem: Table olives are one of the most representatives and consumed fermented vegetables in Mediterranean countries. In Spain, Aloreña de Málaga table olive has a Protected Designation of Origin. However, there is an evident lack of standardization of elaboration processes and HACCP systems thus implying the need of establishing decision-support tools that allow their commercialization and shelf-life extension. Methodology & Theoretical Orientation: The present work aims at developing a decision-making tool to standardize the HACCP system of Aloreña de Málaga table olives based on the identification of potential hazards or deficiencies in hygienic processes for the subsequent implementation of corrective measures. Three representative companies were visited to collect samples from food-contact surfaces, olive fruits, brines, environmental control, olive dressings, water tank, and final product. A quantification system based on a percentage of accomplishment (Paccp 0-100%) was developed based on a series of microbiological and physico-chemical criteria as well as the relative importance of each elaboration step on total hygienic quality. ANOVA statistical analyses were conducted to evaluate significant differences ($P < 0.05$) between obtained measurements. Findings: The calculated Paccp highlighted an increasing trend in the scored values as long as the elaboration process flows towards the final product (i.e. cracking step (Paccp=20%); packaging step (Paccp=70%). Presence of *Staphylococcus aureus* was obtained in intermediate fruits and olive dressings, which were identified as potential contamination sources if they are added as raw ingredients. Washing and cracking steps were identified as critical since high aerobic and Enterobacteriaceae counts were obtained ($3-4 \log_{10}$ cfu/g). Significant differences were denoted between food companies ($P < 0.05$) regarding their implementation of HACCP systems. Conclusion & Significance: The present work brings further the development of an easy-to-use, flexible and useful tool for the Aloreña de Málaga table olive food sector and can be potentially applied to other industries and vegetable products.

Biography

Antonio Valero is an associate professor and researcher at the Department of Food Science and Technology at the University of Cordoba since 2006. He holds a degree in Food Science and Technology and a PhD in Food Microbiology. He has published nearly 60 articles in international journals and books being specially focused on the development of predictive models for growth, probability and inactivation of pathogens. Additionally, his expertise is led to shelf-life determination, and food quality issues. He has been involved in several research projects related to microbial risk assessment and risk management in minimally processed products and optimization of microbial sampling plans for different food risk categories. He participates as a lecturer in AgroFood Masters and in specialized training courses of predictive microbiology.

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