

Hybrid Meat Products with 50% Alternative Protein Replacement: Technological Feasibility, Quality Attributes, and Shelf-Life Performance



Author: Raúl Ansó Blanco // CNTA

Hybrid meat products offer a pragmatic pathway for reducing animal protein consumption while maintaining consumer familiarity and product functionality. This study evaluated the development of hybrid cooked ham, cured chorizo and pulled pork in which approximately 50% of the protein fraction originated from alternative protein ingredients. The investigated proteins included fava bean, pea, fermented fungal-lentil ingredients, microbial proteins and fungal biomass.

Products were characterized through microbiological, physicochemical, nutritional and sensory analyses during refrigerated storage. Hybrid cooked ham achieved shelf-life stability beyond 55 days, maintaining high sensory acceptability and microbiological safety. Hybrid cured chorizo successfully reduced animal protein content while preserving traditional sensory characteristics. Hybrid pulled pork formulations remained stable for up to 90 days and delivered favourable nutritional profiles, including high protein content and fibre enrichment. Across all products, alternative proteins were successfully integrated into conventional meat-processing operations. The results demonstrate that hybrid meat systems constitute a viable intermediate strategy between conventional meat and fully plant-based alternatives, enabling substantial reduction of animal-derived protein while maintaining quality and consumer acceptance.

Recommendation: Consider hybrid meat products as a practical strategy to reduce animal protein content while maintaining the taste, texture and familiarity expected by consumers, enabling a gradual transition towards more sustainable diets.