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DEVELOPMENT AND CHARACTERIZATION OF A WALNUT-ENRICHED PORK SALAMI

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Abstract: The paper aims to develop an innovative homemade salami enriched with walnuts and to conduct a sensory and physicochemical analysis of the final product. Salami is one of the most popular and widely consumed foods, appreciated for its rich flavor, whether enjoyed on its own or paired with other ingredients. The core objective of this study was to create a natural product with nutritional benefits, leveraging the wholesome properties of its key ingredients – pork and walnuts.

To ensure a high protein content, only one type of meat – pork – was used as the raw material. The final product was free from additives and preservatives, making it a healthier option without potential long-term adverse effects.

The salami was prepared using a custom recipe, refined through multiple trials and taste tests. Sensory evaluation was conducted by a panel of 10 tasters, who completed sensory sheets based on an organoleptic examination of the product. Additionally, physicochemical analyses were performed to determine moisture and total dry weight content, salt content (using the Mohr method), titratable acidity and ash. The results showed that all values obtained comply with the current national standards.

• Introduction

Salami is a traditional cured meat product widely appreciated for its distinctive flavor, texture, and versatility in culinary applications. In recent years, consumer demand has increasingly shifted toward healthier meat products with improved nutritional profiles and reduced levels of artificial additives and preservatives. This trend has stimulated interest in developing functional meat products enriched with bioactive ingredients of plant origin, such as nuts, seeds, and dietary fibers, which can enhance both the sensory characteristics and the nutritional value of traditional formulations. The incorporation of natural ingredients aligns with the growing consumer preference for clean-label, additive-free foods that support health without compromising taste or texture.

• Material and method

Fresh postrigor pork meat and pork backfat from a local slaughterhouse were used for salami preparation. Other ingredients used were fresh garlic, walnuts and spices like pepper, salt, sweet paprika powder and chili paprika powder.

Table 1. The recipe used to obtain the two types of salami

Ingredients	Control salami (CS)	Reformulated Salami (RS)
Pork meat (g)	5000	5000
Lard (g)	1500	750
Walnut kernel (g)	-	750
Salt (g)	150	150
Pepper (g)	60	60
Garlic (g)	60	60
Sweet paprika powder (g)	30	30
Chili paprika powder (g)	30	30

The two types of salami (CS and RS) were analyzed for moisture, total dry weight, sodium chloride, ash and titratable acidity (% lactic acid) contents. Each analysis was performed in triplicates.

A panel of untrained judges consisted of 10 members from the students of Faculty of Food Engineering from Timișoara was used to evaluate the salami samples in terms of appearance, taste, odor, color, consistency and overall acceptability.

• Results and discussions

The proximate composition of the control and reformulated salami (with walnuts) is shown in Table 2.

Table 2. Proximate composition of control and reformulated salami samples

	CS	RS
Moisture (%)	24.8 ± 0.264	24.3 ± 0.173
Total dry weight (%)	75.2 ± 0.264	75.7 ± 0.173
Sodium chloride (%)	1.315 ± 0.015	1.287 ± 0.019
Ash (%)	3.97 ± 0.055	4.61 ± 0.127
Titratable acidity (% lactic acid)	0.37 ± 0.017	0.35 ± 0.01

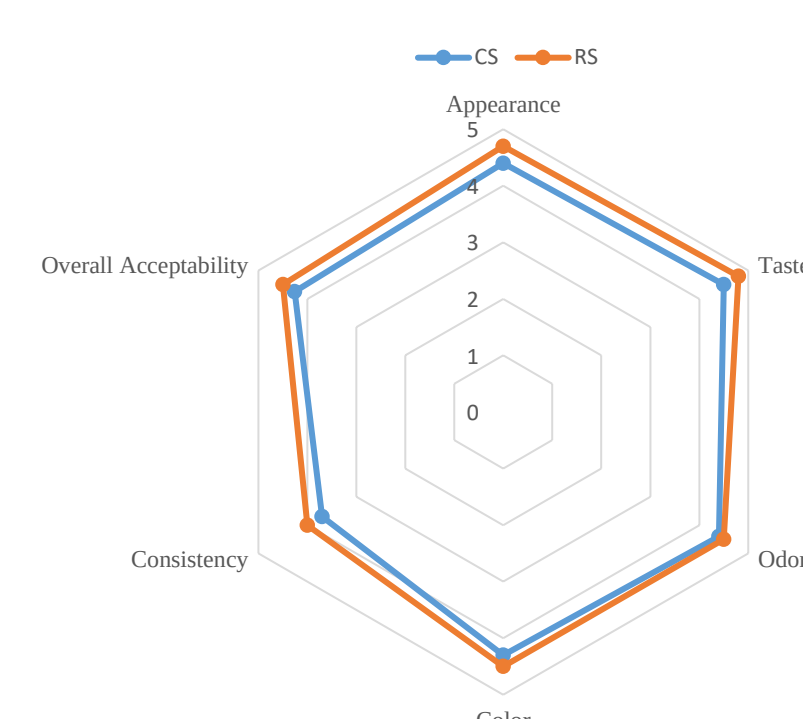


Figure 1. Sensory analysis of the salami samples

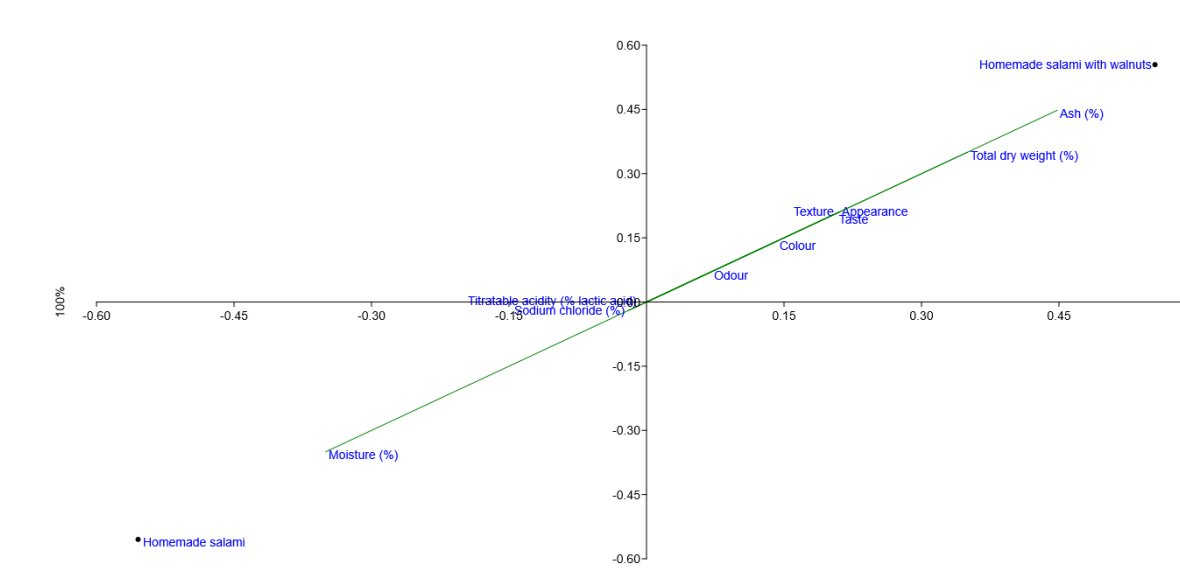


Figure 2. PCA analysis of the salami samples

• Conclusions

Walnut kernels are an excellent and accessible source of bioactive compounds, including polyunsaturated fatty acids, phenolic compounds, tocopherols, and antioxidants, making them an ideal functional ingredient for food products. Walnut kernel, owing to its high nutritional value and strong bioactive potential, represents a valuable non-conventional material for improving the functional and health-promoting quality of foods. The reformulation of pork salami with walnuts resulted in a slight decrease in moisture and sodium chloride content, a small but meaningful increase in ash, stable acidity, and slightly higher total solids. These modifications suggest that walnut addition improves the mineral content of the salami, but also its physicochemical characteristics. The observed changes confirm that partial replacement of animal fat with plant-based ingredients can improve nutritional quality without compromising product integrity.

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