**Modeling of extrusion process to reduce allergenicity in snack with greek nuts**

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According to World Allergy Organization (WAO) data, almost 250 million records of people globally, are affected by food allergies, especially Infants (5–8%). Up to date literature has highlighted the application of common processing technologies in allergenicity reduction, including thermal, enzymatic, and fermentation treatments1, which are not cost-effective, and can potentially degrade final product quality 2.

In this context, processing technologies can be applied, that induce both thermal and structure modifications in a food matrix, providing a more sustainable solution in food production. Despite food processing, the type of food matrix involved, in terms of structure and allergenicity are also key factors in potential reduction of food allergens.

The extrusion influences allergenicity by modifying protein structures—a high-shear, high-pressure, and heat-intensive process—inducing molecular transformations and crosslinking in proteins and polysaccharides, which can impact allergenic potential.

The **purpose of this study was** to evaluate the effect of extrusion on reducing allergenic properties in Greek pistachios and walnuts varieties, by examining changes in protein secondary structures. Three main functions of the extrusion were used (thermal, torque, mixing) for process optimization. The application of different temperatures 100, 120 and 140 oC, various shear stresses 60, 70 and 80 rpm, and moisture content 30%, 35% and 40% were applied to evaluate the expansion ratio, the color and the bulk density and specific mechanic energy of the extrudates. The JMP program was used to minimize the trials and express the best mathematical equitation for the optimization of the quality characteristics of extrudates.

References

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