

Foaming and Structuring Properties of Chickpea Cooking Water (Aquafaba): Effect of Ingredient Added and Their Particle Size

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Abstract : Chickpea cooking water (known as aquafaba, AF) is a “waste” product having interesting technological properties exploitable for sustainable plant-based food applications that can encounter a larger consumers demand. Different process conditions to obtain AF were defined; the addition of hydrocolloid (i.e., guar gum) and lactic acid to improve the techno-functionalities of aquafaba was explored, and the effects of these ingredients on the foaming properties and the quality of plant-based target confectionery products were investigated. Meringues having a solid foam structure and a simple formulation (i.e., foaming agent and sugar) and chocolate mousse were chosen as target foods. The effects of the sugar particle size reduction on the empirical and fundamental rheological properties of the foaming agent and of the mousse were evaluated. The treatment did not significantly change the viscosity of the system, while the overrun and foam stability were affected by sugar particle size, and mousse with coarse sugar was characterized by a higher consistency, confirming the importance of the particle size of the ingredients on the texture of the final product. This study proved that AF, a recycled “waste” product, possesses interesting techno-functionalities properties further enhanced by adding lactic acid and modulable according to ingredient particle size; these AF results are useable for plant-based food applications.

Keywords : foaming properties, foam stability, foam texture, particle size, acidification, aquafaba

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