**Functional and physicochemical properties of chia seed mucilage extracted using an innovative extraction method**

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**Abstract**

[Chia seed](https://www.sciencedirect.com/topics/food-science/chia-seed) mucilage (CSM) is a novel, eco-green, and sustainable edible [hydrocolloid](https://www.sciencedirect.com/topics/food-science/hydrocolloid) derived from chia, offering a promising alternative to commercial hydrocolloids. This study explores the application of centrifugal force and drying methods to compare the techno-functionalities of CSM obtained through a novel, faster, and scalable extraction approach as opposed to traditional methods. Liquid mucilage extracted using a modified [cream](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/cream) separator is subjected to freeze-drying (CSMF) and oven-drying (CSMO). The efficiency of this innovative extraction method is compared to the traditional dry fractionation approach, known for its complexity and time consumption. Remarkably, the modified unit significantly (*p*<0.05) reduces mucilage separation time (4.06 ± 1.28 min), opening doors for future commercialization. CSMF obtained through cream separator and freeze-drying, exhibits superior colour properties. Additionally, it demonstrates superior performance compared to the traditional approach in terms of functional properties such as water-holding capacity (WHC), solubility, and particle size. Furthermore, the advantages of the faster extraction approach are reinforced through charge analysis, Fourier Transform Infrared spectra (FTIR), thermal transitions, and rheological properties. The microstructure analysis of CSM highlights the influence of drying techniques on its morphology. This study not only introduces a novel method for mucilage extraction but also validates the findings through comparison with existing literature on CSM.