

**Title: Physicochemical and Functional Characterization of Grass Jelly (*Mesona chinensis*) Polysaccharides as Next-Generation Prebiotics for Human and Animal Health**

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*Mesona chinensis* (grass jelly) is widely used in Vietnam as both a medicinal and edible plant, valued for its high polysaccharide content that contributes to its traditional gelling properties. However, detailed information on the chemical characteristics and broader functional applications of polysaccharides from Vietnamese sources remains limited. This study extracted and comprehensively characterized polysaccharides from Vietnamese *M. chinensis* to assess their potential as prebiotics and functional additives for aquaculture. The extraction yielded 8.72% crude polysaccharides, containing 19.8% carbohydrates, 6% protein, and 9.1% uronic acids. The polysaccharides exhibited a high molecular weight of approximately 551 kDa and were composed of diverse monosaccharides, including fucose (1.53 µg/mg), xylose (1.08 µg/mg), glucose (0.757 µg/mg), mannose (0.296 µg/mg), galactose (0.353 µg/mg), galacturonic acid (0.237 µg/mg), and ribose (0.168 µg/mg), forming a heterogeneous polysaccharide profile. This composition, together with the high molecular weight, suggests strong gelling, thickening, and bioactive potential. Particle size analysis revealed a narrow and uniform distribution (D10 ≈ 0.02 µm, D50 ≈ 14.3 µm, D90 ≈ 85.4 µm; Span ~5.95), supporting stability and performance in food, feed, and aquaculture formulations. Thermogravimetric analysis demonstrated high thermal stability with decomposition occurring at 248.7 °C, indicating suitability for industrial processing conditions. Overall, the combined biochemical, structural, and physical properties highlight the promise of *M. chinensis* polysaccharides as prebiotic ingredients and thermally stable functional additives for food and aquaculture applications.

**Biography of the presenting author**

Thuy-Trang PHAM has completed bachelor's and master's degrees at Can Tho University and started her PhD at the University of Liège in 2025.

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