**Oat Protein Concentrate Produced via Dry Fractionation as a Potential Food Ingredient**

D Tagle-Freire1,2, M Stieger2,3, C Forde2 and M Schutyser1

*1Food Process Engineering, Wageningen University & Research, Bornse Weilanden 9, 6708 WG, Wageningen, the Netherlands*

*2Sensory Science and Eating Behaviour, Division of Human Nutrition and Health, Wageningen University & Research, Stippeneng 4, 6703 HD, Wageningen, the Netherlands*

*3Food Quality and Design, Wageningen University & Research, Bornse Weilanden 9, 6708WG, Wageningen, The Netherlands*

The global food production system faces challenges related to resource inefficiency and environmental impact, necessitating more sustainable approaches. Plant-based proteins are increasingly recognized as viable alternatives to animal proteins due to their reduced environmental footprint. However, conventional wet extraction methods for plant proteins are resource-intensive and can degrade the structural and functional integrity of proteins, limiting their nutritional and application potential. In contrast, dry fractionation methods, such as the combination of milling and air classification, offer a more sustainable alternative by eliminating water use and reducing energy consumption while preserving proteins in their native state1.

Oats, primarily valued for their beta-glucan and starch content, possess a protein fraction with a superior digestibility score among cereals (DIASS of 77%). Despite this, oat protein remains underutilized due to techno-functional challenges such as limited solubility, and poor gelling and foaming capacity2. These properties could vary if the proteins remain in their native state through dry extraction methods. However, the similarity in particle size between oat starch and protein presents an additional challenge to achieving efficient separation using dry fractionation techniques.

Our work aims to refine the dry fractionation process to efficiently produce oat protein concentrates with fewer steps, improving feasibility and scalability. By analyzing the composition and key techno-functional properties of the resulting fractions, this work provides valuable insights into their potential applications in food formulations. This research contributes to the growing body of knowledge on sustainable food processing and highlights the potential of oats as a dual-purpose crop for starch and protein-based ingredients. By optimizing dry fractionation processes, this work addresses key challenges in sustainable food ingredient development while supporting the shift towards a resource-efficient food system.

*References:*

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2 L. Kumar, R. Sehrawat, and Y. Kong, “Oat proteins: A perspective on functional properties,” *LWT*, vol. 152, Dec. 2021, doi: 10.1016/j.lwt.2021.112307.