



## Functional valorization of sea buckthorn pomace through drying and granulometric fractionation

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**Abstract:** *The conversion of food processing by-products into functional ingredients is an important strategy for supporting the principles of the circular economy and sustainable food production. Powders obtained from fruit and vegetable waste are increasingly being used as natural ingredients in food products, with the potential to enhance nutritional quality and functional properties. Sea buckthorn pomace (SBP), a by-product of juice processing, is a promising but underutilised resource in this context. SBP contains significant amounts of dietary fibre, polyphenols and other bioactive compounds, making it a suitable raw material for developing functional ingredients. Dry fractionation is also considered an environmentally friendly processing approach as it avoids the use of chemical solvents and requires less energy than conventional methods, while preserving the material's functionality.*

### Introduction

SBP, which is generated during juice production, is a valuable source of dietary fibre and bioactive compounds, including polyphenols and antioxidants, among fruit processing residues.

Drying and dry fractionation are environmentally friendly processing methods that improve product stability, preserve functional compounds and enable the production of powders with different physicochemical and functional properties. After drying, the material loses most of its moisture content, becoming lighter and more brittle. Meanwhile, the seeds and skins become more distinct and easier to separate, as shown in Figure 1.

In this context, the present study investigates how drying and granulometric fractionation affect the functional characteristics and potential food applications of sea buckthorn pomace powders.

Thanks to its rich chemical composition and functional characteristics, SBP has significant potential for use in the food industry. SBP extracts can be used as nutraceutical ingredients, functional components in bakery products, beverages, and confectionery, and as natural antioxidants in various food applications. The numerous health benefits of sea buckthorn pomace make it a good candidate for incorporation into novel food products.

### Conclusions

These characteristics highlight the potential of sea buckthorn pomace as a valuable source of functional compounds for use in the food industry. Furthermore, dry fractionation is a sustainable, environmentally friendly processing strategy that reduces solvent use and energy consumption while preserving the material's functional properties.



Figure 1. Sea Buckthorn Pomace Processing Flow

**Acknowledgements:** The authors would like to thank to the Doctoral School “Engineering of Vegetable and Animal Resources”, University of Life Sciences “King Mihai I” from Timișoara (Calea Aradului 119, 300645 Timișoara, Romania), for the academic support and resources provided throughout the development of this research.