New functional food products based on wheat and soybean processing by-products

Glenise Bierhalz Voss[1], Rita Sardão[1], Ema Dias[2], Ana Maria Gomes[1], Manuela Pintado[1]

[1] Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Diogo Botelho 1327, 4169-005 Porto, Portugal.

[2] G**ermen-Moagem de Cereais, S.A**, **4460-901** Porto, Portugal

* E-mail address: mpintado@porto.ucp.pt

CATÓLICA FACULTY OF BIOTECHNOLOGY PORTO

Introduction

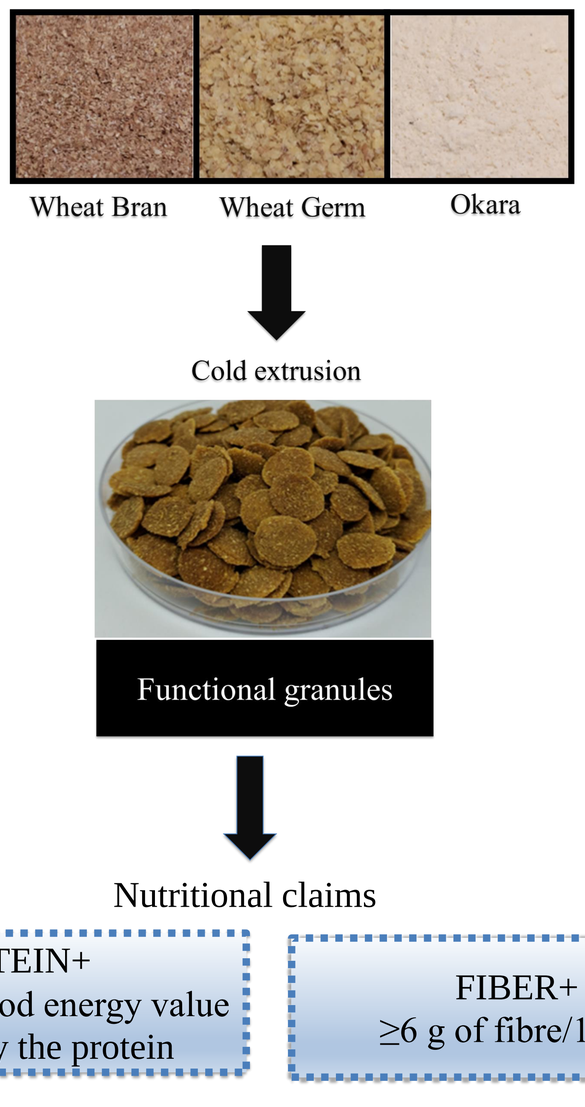
Food by-products are not yet fully exploited and deserve all the efforts towards increasing their consumption by humans. Today, more than ever, making suitable use of all food resources can be crucial to meet the demand for food by future generations and contribute significantly to overcome environmental burdens. In the cereal industry, wheat bran and germ (11-15% and 2–4% of the seed weight, respectively) are wheat milling by-products with various nutritional attributes, that are not yet efficiently used for human consumption, being sold mainly as animal feed at a low price. Besides adding value, more regular consumption of these products can be associated with health benefits.

Objectives

The present work aimed to develop two new high-value functional granules for human consumption based on the valorisation of wheat and soybean by-products (bran, germ and okara), ensuring high contents of protein, fiber and omega-3 fatty acids. The objective was to formulate functional granules (F1 and F2) that could simulate the composition of seed grains currently considered “superfoods” due to their richness in essential nutrients and bioactive compounds.

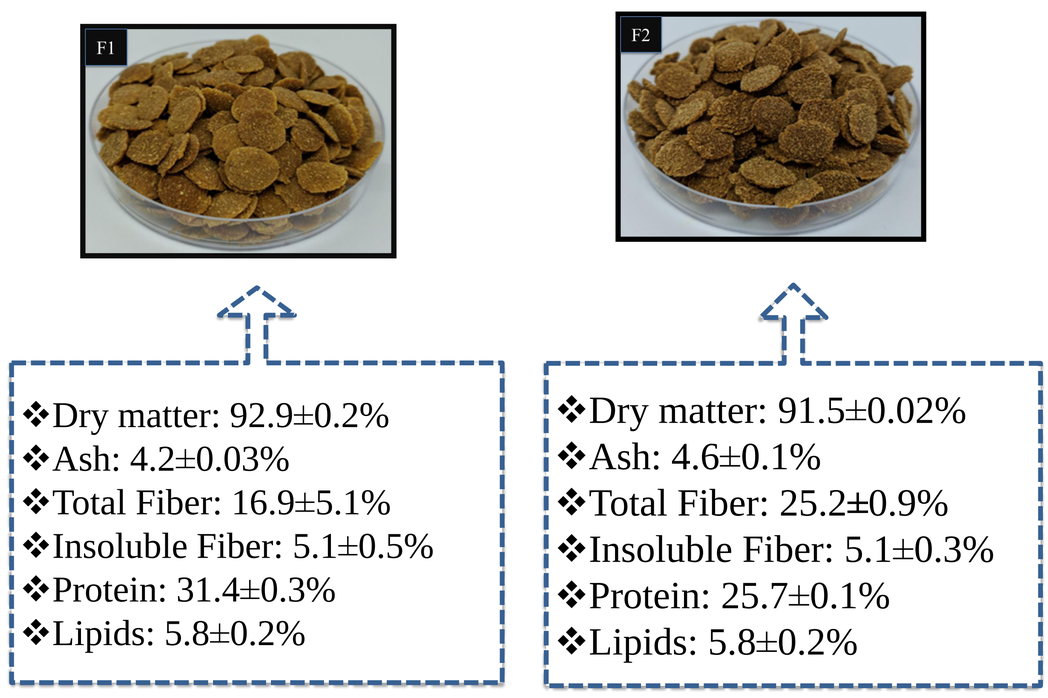
Methods

The granule formulations F1 (bran, germ and okara) and F2 (bran and germ) were established and successfully developed by cold extrusion. These together with the original by-products were characterized regarding their nutritional composition and total phenolics and antioxidant activity (ABTS and DPPH).



Results

The nutritional composition of functional granules for human consumption.



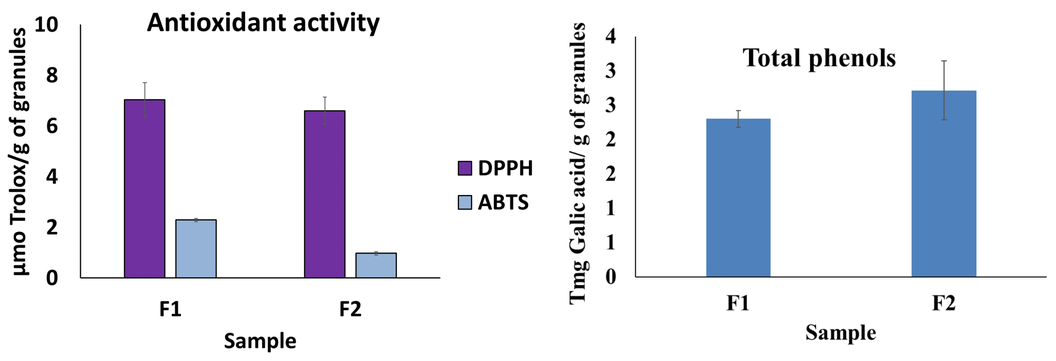


Figure 1. Antioxidant activity and total phenols of functional granules.

Conclusions

These by-products can be valorized as potential ingredients for human consumption with added nutritional value and potential functional properties. The composition of functional granules showed that these products can be considered “superfoods”, with nutritional claims, as PROTEIN+ and Fiber+, antioxidant activity.

Acknowledgements

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