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ABSTRACT BOOK

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A NEW MICROALGAE-BASED GLUTEN-FREE PASTA

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Abstract:
The use of microalgal biomass as a nutritional supplement is widely spread, however, its utilization for incorporation in food products is still limited. *Arthrospira platensis* (spirulina) is known for its high protein, γ-linolenic acid and phycocyanin content [1]. Fradique et al. [2] successfully incorporated spirulina in wheat pasta and recently, a study with cookies showed that spirulina can provide a significant structuring effect, probably due to its high protein content (around 70% d.w.) [3].
In this work, *A. platensis* F&M-C256 biomass was incorporated at 2 and 3% in rice pasta dough. This spirulina gluten-free pasta (SGFP) was compared to the control (without spirulina) and to a durum-wheat reference pasta. The purpose of the work was to provide high levels of bioactives and to achieve a structuring effect similar to gluten-containing pasta. Cooked pasta quality parameters and texture properties (firmness, stickiness and extensibility) were characterized. Biochemical composition, radical scavenging activity (RSA), total phenolic (TPC), phycocyanin and chlorophylls content, and *in vitro* digestibility (IVD) of all the products were also evaluated.
SGFP presented significantly higher water absorption and swelling than the control and the durum-wheat pastas, especially with 3% incorporation. Regarding texture, firmness properties were similar for all pastas, while SGFPs showed less stickiness than the wheat pasta.
SGFP (2 and 3%) showed significantly higher TPC (from +9% to +100%) and RSA (from +10% to +31%) compared to the control. As expected, SGFP added with 3% spirulina biomass exhibited the lowest IVD.

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Keywords
Arthrospira platensis, pasta, gluten-free, bioactivity, cooking quality

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