

ABSTRACT TEMPLATE**Exploring micro- and macromolecular properties in buckwheat couscous**

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Buckwheat is a pseudocereal particularly rich in functional and nutraceutical components, and a sustainable crop. However, buckwheat presents several anti-nutritional factors that limit nutrient bioavailability. Sprouting and fermentation - both environment-friendly and easy to scale up processes - may help in overcoming these drawbacks. This study reports on the overall micro- and macromolecular features of a buckwheat couscous enriched with sprouted buckwheat. Couscous was chosen as a natural, sustainable food, and the non-enriched product is already on the market. The multidisciplinary approaches used in this study showed that sprouting induced changes in: 1) the proteins profile and the protein-protein interactions; 2) the ratio between soluble and insoluble polyphenols; 3) the content of many antinutritional compounds. The addition of sprouted flour to 50% did not impair the production of couscous that was similar - from a sensorial standpoint - to the non-enriched one. The couscous processing - that modifies the overall protein structure and the interaction among micro - and macromolecules in buckwheat flour - did not affect the positive modifications induced by sprouting, that were still present in the enriched product even after cooking. The results from this investigation provide a comprehensive overview of the impact of processing - including sustainable processes - on the nutritional and biochemical attributes of buckwheat, offering valuable insights into the potential of this crop as a functional food.

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