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Microalgae: an unexplored source to develop functional gluten-free pasta

Patrícia Fradinho ⁽¹⁾; Alberto Niccolai ^(2*); Rita Soares ⁽¹⁾; Isabel Sousa ⁽¹⁾; Liliana Rodolfo ^(2,3); Natascia Biondi ⁽²⁾; Mario R. Tredici ⁽²⁾; Anabela Raymundo ⁽¹⁾

⁽¹⁾ LEAF, Instituto Superior de Agronomia, Universidade de Lisboa, Portugal; ⁽²⁾ DISPAA, University of Florence, Italy; ⁽³⁾ Fotosintetica & Microbiologica S.r.l., Italy

alberto.niccolai@unifi.it

Microalgae are generally recognized as a source of bioactive compounds and their use as nutritional supplements is becoming widely spread in western countries. However, the use of microalgae biomass for incorporation in food products is still limited. The cyanobacterium *Arthrospira platensis* (spirulina) is known for its high protein, as well as γ -linolenic acid and phycocyanin contents [1]. Our research group has already successfully incorporated spirulina in wheat pasta [2] and recently, a study with cookies showed that spirulina provided a significant structuring effect, in terms of texture, probably due to its high protein content (around 68% on dry biomass)[3]. In this work, *Arthrospira platensis* F&M-C256 biomass (from 1 to 10%) was incorporated in rice pasta dough. This spirulina gluten-free pasta 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 algal bioactives and to achieve a structuring effect similar to gluten-containing pasta. To study the dough mixing characteristics a microdoughLab 2800 (Perten Instruments, Sweden) was used. Cooked pasta quality parameters and texture properties (firmness, stickiness, and extensibility) were determined. Pasta biochemical composition (proteins, carbohydrates, lipids, minerals, fatty acids), radical scavenging activity, total phenolic content and in vitro digestibility were also evaluated.

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Acknowledgements:

This work was supported by national funds from Fundação para a Ciência e a Tecnologia (Portugal) through the research unit UID/AGR/04129/2013 (LEAF). Patrícia Fradinho acknowledges her PhD grant (C0144M) from Universidade de Lisboa.