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BOOK OF ABSTRACTS

Proteomic characterization of enzymatic-generated antifungal bioactive peptides originating from okara.

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Application projects often provide scientific information which, contrary to what is normally pursued, can constitute a starting point for understanding physiological and biochemical aspects that are still unclear and incomplete. This work fits into this context. Conversion of agri-food byproducts for the full use of natural resources is one of the main challenges faced nowadays by the industrialized world. Okara is a byproduct generated in huge quantities during soymilk or tofu production, thus posing a significant disposal problem. Okara has high protein content (about 25-40%, mainly seed storage proteins, SPs), which makes this byproduct interesting and exploitable from a biotechnological point of view. Antifungal peptides have been described in plant seeds and okara as well, indicating the potential to produce bioactives exploitable for integrated pest management. This work aims to describe a rapid and economic procedure to isolate proteins from okara, and to produce and characterize an enzymatic proteolyzed product, active against fungal plant pathogens. A dose-response inhibitory activity was established against fungi belonging to the *Fusarium* genus. Enrichment of the active fraction was obtained through the combination of different chromatographic techniques. Mass Spectrometry analyses allowed the identification of potential candidate bioactive peptides. The exploitation of okara to produce antifungal bioactive peptides has not only the potential to turn this by-product into a paradigmatic example of circular economy but also opens perspectives on the multifunctionality of SPs, allowing to pave the way for understanding the possible bioactivity of peptides that originate from the breakdown of protein reserves during germination.

Keywords: *Glycine max*, proteomics, seed, storage proteins, proteolysis.

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