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Extract of phenolic compounds obtained from tara (*Caesalpinia spinosa*) pods can mitigate acrylamide and hydroxymethylfurfural formation of Chilean bread without affecting negatively its sensory attributes



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Chile is the second largest consumer of bread in the world and the first one in Latin America, reaching 96 kilograms per capita of bread per year. In addition, nearly 59% of the population consumes bread at least three times per week, being indispensable in the Chilean food. Chilean consumer preferences include foods that may contain considerable amounts of neo-formed contaminants (NFCs) such as acrylamide (AA) and hydroxymethylfurfural (HMF) which have been classified as potential human carcinogens. Hallulla bread, a Chilean highly consumed starchy food, contains considerable amounts of acrylamide and hydroxymethylfurfural, two potential carcinogenic neo-formed contaminants. The objective of this research was to study the effect of tara (*Caesalpinia spinosa*) pod polyphenolic extract (TPPE) on the mitigation of AA and HMF in “hallulla” bread while minimizing undesirable changes in its final sensory attributes. The effect of different TPPE concentrations was evaluated (0-3000 mg/kg-1) over NFC formation during “hallulla” baking and its impact on sensory attributes was assessed and validated by a sensory panel. AA content was mitigated by ~90% at 1500 mg/kg-1 TPPE added to the bread pieces prior baking. A similar descriptive profile of the final product, with significant changes only in the crumb color was observed. HMF was mitigated by ~85% in bread pieces, when the highest concentration (3000 mg/kg-1) of TPPE was used. Our results highlight the potential of using polyphenolics from tara pod extracts to reduce the exposure of consumers to dietary neo-formed contaminants.

Biography

Franco Pedreschi Plasencia is full time Professor and Head of the Department of Chemical Engineering and Bioprocess of the Pontifical Catholic University of Chile. His research lines are: chemical food safety; computer vision applied to food technology, microstructure and physical properties of food. He has edited the book "Chemical Food Safety and Health" together with Zuzana Cieszarova in 2013. He has written 75 ISI publications (h index 24). He has been elected to the Committee of the Scientific Version of Nestlé Henri Prize since 2010 until now. Finally, he has revised several scientific papers in prestigious ISI journals.

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