sciforum-103075: Antioxidant and antihypertensive properties of biscuit melanoidins

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Melanoidins isolated from biscuits are good candidates for use as functional ingredients in the food industry because they can improve sensorial characteristics and possess biological properties with several potentially beneficial effects on human health. However, their bioactivity is closely related to their bioaccessibility and bioavailability. Therefore, this study focuses on the evaluation of the effect of the use of different proteolytic enzymes, pronase E and endoprotease papain enzyme (EP), for the isolation of biscuit melanoidins, as well as the effect of the gastrointestinal digestion process on antioxidant activity. The total antioxidant capacity was significantly increased after in vitro gastrointestinal digestion for both melanoidins, being significantly higher for melanoidins from pronase E. Additionally, the bioactivity of the bioavailable fractions of melanoidins against endothelial damage was tested for their ability to modulate the activity of angiotensin-converting enzyme (ACE) in phorbol 12-myristate-13-acetate (PMA)-induced endothelial cells (HUVECs). The results show the absence of the cytotoxicity of the bioavailable melanoidins and a decrease in ACE levels was observed as a biomarker of antihypertensive activity. These results suggest that bioavailable melanoidins may improve hypertension by inhibiting the activity of ACE. In conclusion, melanoidins may be promising candidates for blood pressure management and health promotion, highlighting their role as functional ingredients in food applications.

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