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Evaluation of nitrate, nitrite, saponin contents, total antioxidant potential, antioxidant capacity and activity in different products of beetroot: Cereal bar, juice and chips

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The beetroots of *Beta vulgaris* L. species is considered as NO_3^- - dietary and antioxidants source. However, the amount of these nutrients varies in relation to the administration form. This study aimed to develop a beetroot cereal bar (BB) and compare the NO_3^- , NO_2^- , saponin contents, potential, capacity and antioxidant activity with beetroot juice (BJ) and beetroot chips (BC). All ingredients used in the BJ, BC and BB formulations were obtained from the market of Rio de Janeiro, Brazil. The NO_3^- , NO_2^- contents and the Total Antioxidant Potential (TAP) were analyzed by High-Performance Liquid Chromatography (HPLC). Saponins quantification was performed using spectrophotometry. The assessment of antioxidant capacity and activity was performed by the Ferric Reducing Ability of Plasma (FRAP), Trolox Equivalent Antioxidant Capacity (TEAC), Oxygen Radical Antioxidant Capacity (ORAC), 2,2-diphenyl-1-picrylhydrazyl radical scavenging assay (DPPH) and lipid peroxidation methods, respectively. BB showed the highest NO_3^- (16.6 ± 0.1 mmol/100 g) and saponins (8648.3 ± 1.85 mg/100 g) contents when compared to BJ and BC. Significantly, higher values in the antioxidant capacity analysis were observed in BB when compared with BJ and BC. BB also showed an ability to inhibit lipid peroxidation (86.0%) significantly higher than BJ (54.3%), BC (65.0%), butylated hydroxyanisole (BHA, 76.5%), α -tocopherol (34.3%) and similar to butylated hydroxytoluene (BHT, 86.4%) standards. All the beetroot forms showed a high TAP. In conclusion, as a new nutritional approach, BB showed to have the highest contents of nutrients, potential and total antioxidant capacity. Hence, these characteristics are important to improve the vascular health and endothelial functions.

Biography

Eduardo Mere Del Aguila has completed his PhD from Federal University of Rio de Janeiro, Brazil. He has done his Post-doctoral studies from Federal University of Rio de Janeiro. He is a member of the Food Science Graduate Program. He has published more than 16 papers in reputed journals and has been serving as a reviewer of different reputed journals.

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