

Title Phenolic profile, antioxidants, and sensory acceptance of bioactive-enhanced peanuts using ultrasound and UV

Author Jocelyn M. Sales and A.V.A. Resurreccion

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Abstract

Phenolic antioxidant compounds, including resveratrol, are associated with reduced risk of cancer and cardiovascular disease, and delayed ageing. This study aims to quantify synergistic enhancement of phenolics and antioxidants in peanuts by combinations of ultrasound (US)–UV treatments, compared to either US or UV, and determine optimum parameters for combined US–UV process. LC–MS confirmed the bioactive phenolics: *trans*-resveratrol, *trans*-piceid, and *p*-coumaric-, caffeic-, and ferulic-acids, which achieved maximum increases, with combined US–UV, compared to US or UV; as did total phenolics (TP), TEAC, and ORAC. Optimum parameters for a combined US–UV process will provide up to 4.8 µg/g *trans*-resveratrol, 170 µg/g *p*-coumaric acid, and 150 µM TE/g ORAC or >100% that found in red wines; 1.0 µg/g *trans*-piceid, 2.6 µg/g ferulic acid, 1.48 mg GAE/g TP, and consumer acceptance 5. Optimum combined US–UV resulted in 1.3× or 2.3× the *trans*-resveratrol concentrations in US or UV, respectively, suggesting synergistic effect of UV and US in enhancing resveratrol in peanuts.