

Title Phenolic compounds of Andean purple corn extracts have antimutagenic properties
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Abstract

Purple Corn is a rich source of anthocyanins and other phenolic compounds. Besides coloring attributes, purple corn also provides antioxidant, antimicrobial and anticarcinogenic properties. More recently, purple corn extracts have been studied for prevention of obesity and amelioration of hyperglycemia. Our objective was to study the antimutagenic properties of purple corn extracts in relation to the type of phenolic compounds present. A total phenolic fraction (TPF) was obtained from purple corn extract (PCE) using a Sep-Pak C18 cartridge. The TPF was fractionated by partition in ethyl acetate: water, obtaining a water fraction or anthocyanin rich fraction (FI) and an ethyl acetate phenolic fraction (FII). Antimutagenicity was assayed with a *Salmonella typhimurium* TA98 strain and a Trp-P-1 food mutagen. Toxicity assays were performed under the same conditions of the Ames test using Nutrient Agar Plates. The antioxidant activity of each fraction was evaluated using the DPPH method. All assays were performed on phenolic concentration basis (expressed as chlorogenic acid). Results showed a phenolic dose dependence inhibition of mutagenicity. For PCE a 96.0% inhibition was obtained with 850 µg phenolics/ plate, while 97.2% was obtained for TPE. The phenolic dose-response curves for both extracts were similar at any concentration tested (21 to 850 µg/ plate). Inhibitions of 92.1% and 100% were obtained for FI and FII, respectively, with 850 µg phenolics/ plate. No toxic effects were seen with the range of concentrations of phenolics used. The IC₅₀ values for PCE, TPF, FI and FII were 272.7, 243.5, 321.7 and 95.2 µg phenolics/ plate, respectively. Antioxidant activity for those same fractions were: 0.95, 1.1, 1.02 and 0.84 µg Trolox/ µg chlorogenic acid, respectively. These results indicate that phenolic compounds present in purple corn are responsible for the antimutagenic activity. Additionally, phenolics present in FII showed higher antimutagenic properties compared to FI phenolics.