Lycopene-rich fractions derived from pink guava by-product and their potential activity towards hydrogen peroxide-induced cellular and DNA damage.

ABSTRACT

Effects of solvent and supercritical carbon dioxide (SC-CO2) extraction on antioxidant and cytotoxic activities of lycopene-rich fractions of decanted pink guava by-product (decanter) were determined with lycopene-equivalent antioxidant capacity, β-carotene bleaching and MTT (3-(4,5-dimethylthiazol-2yl)-2,5-diphenyl tetrazolium bromide) assays. Extraction with SC-CO2 gave a higher yield than solvent extraction (3.15 vs. 0.68mg/100g dried decanter, corresponding to 42.99 and 33.63mg of lycopene). No cytotoxicity was found in Chang liver cells supplemented with either extracts (6.25-200μg/ml). Solvent extract at 25μg/ml (2.32μM lycopene) and SC-CO2 extract at 200μg/ml (5.09μM lycopene) had protective effect against hydrogen peroxide-induced cytotoxicity. However, only high concentrations of solvent extract (200μg/ml; lycopene=18.65μM) or lycopene standard (10μM) protected cells against DNA damage. Supercritical fluid extraction demonstrated a higher yield in lycopene-rich fraction from decanter. These fractions have the potential to be developed as a functional ingredient to prevent oxidative stress and other related diseases.

Keyword: By-product; Comet assay; Cytotoxicity; DNA damage; Lycopene; Psidium guajava.