Anais do Simpósio Latino Americano de Ciências de Alimentos ()
Anais do Simpósio Latino Americano de Ciência dos Alimentos
ISSN: 2447-2840

Bioactive Compounds, Antioxidant and Antiproliferative Activity of Red-jambo Peel

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Red-jambo (Syzygium malaccence) can be found in Brazil, mainly in Northeast, North and Southeast part of the country. Preliminary studies showed that the peel accumulates the highest amount of phenolic compounds, flavonoids and antioxidant capacity from the fruit, demonstrating interesting action against free radicals. The results incites investigation of the role of red-jambo in the pathophysiology of oxidative stress-induced disorders, like cancer. The aim of this study was to investigate phenolic compounds in dried ethanolic extract of red-jambo peel. Furthermore we assessed its antioxidant activity using a cell line-based method, which provides a better understanding of the phytochemicals dynamic than the traditional methods; and investigate the cytotoxicity and antiproliferative activities of the peel in the HepG2 tumoral cell line. An ethanolic extract of the freeze-dried peels was obtained and used in the following analyses: phenolic compounds (Folin-Ciocalteau and HPLC-DAD/FLD), yellow flavonoids (colorimetric method), peroxyl radical scavenging capacity (PSC), ORAC, cellular antioxidant activity (CAA), cytotoxicity and antiproliferative activity. The ethanolic extract of the peel showed significant amounts of total phenolic compounds and flavonoids (15.88 mgGAE g-1 and 4.41 mgCE g-1, respectively). Major compounds identified were cyanidin-3-glucoside, cyanidin-3,5-diglucoside, procyanidin B1, isorhamnetin-3-O-glucoside, peonidin-3-O-glucoside, (−)-epicatechin, (−)-epicatechin gallate, among others. Antioxidant activity values were: PSC =1.71 mg vitamin CE g-1, ORAC =222.07 μmol TE g-1 and CAA =62.44 μmol QE 100 g-1. The PSC value of red-jambo peel was similar to some blueberries and cranberry. The ORAC values were also higher than blueberries and red grape; and the CAA value, similar to the blueberry varieties. The antiproliferative activity (EC50= 40.90 mg/mL) was also higher than some blueberry varieties. These findings clearly showed that red-jambo peel has antioxidant and antiproliferative activity comparable to fruits recognized by the great antioxidant and antiproliferative capacity and can be applied in the food and pharmaceutical industry.

Presentation Type

Pôster

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Track

Chemical and physicochemical characterization of food (FQ)

Keywords

Antioxidants

anthocyanins

Citotoxidade

How to cite this paper?