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COMMERCIAL CITRUS AND *Campomanesia xanthocarpa* (Mart.) O. Berg PECTINS INDUCED CYTOTOXICITY ON GLIOBLASTOMA CELLS

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INTRODUCTION

The *Campomanesia xanthocarpa* (Mart.) O. Berg, popularly known as gabiroba, is a Brazilian Myrtaceae family species that have been demonstrate a broad spectrum of therapeutic effects, including: antioxidant, antibacterial, antiulcerogenic, and antidiabetic effects (Barbieri et al. 2019, Carbohydr. Polym). However, the bioactivities of pectins extracted from gabiroba fruits, as well as their antitumor potential, have remained unexplored. Commercial citrus pectin (CP) have been exploited for their anticancer potential due to their therapeutic properties and their low toxicity to healthy cells (Zhang, Xu, Zhang, 2015, Trends Food Sci. Technol.). Thus, the aim of this study was to purify the pectin extracted from gabiroba pulp and compare its chemical structure and the antitumor potential with CP on a human glioblastoma model.

MATERIAL AND METHODS

Gabiroba purified pectin (GPP) was isolated from gabiroba fruits by boiling water extraction, followed by precipitation with ethanol 99%, freezing-thawing, Fehling treatment and dialysis. Monosaccharide composition was determined for GPP and CP (Sigma) by gas-liquid chromatography and by the colorimetric m-hydroxydiphenyl method (Barbieri et al. 2019, Carbohydr. Polym). T98G cells were exposed to 25, 100, and 400 µg mL^{-1} of CP and GPP for 48 h. Cell cytotoxicity was determined by crystal violet assay and results were expressed as percentage of cells relative to control (100%) ± SD of 3 independent experiment each one in sextuplicate ($p<0.05$).

RESULTS

The monosaccharide composition showed that the GPP was composed of galacturonic acid (58.8%), arabinose (28.5%), galactose (11.3%) and rhamnose (1.1%), comprising 57.7% of homogalacturonans (HG) and 42.0% of type I rhamnogalacturonans (RG-I); while CP presented 82.5% of galacturonic acid, 11.2% of galactose, 3.6% of arabinose, and 1.6% of rhamnose, comprising 80.9% of HG and 18% of RG-I. Both CP and GPP induced cytotoxicity on glioblastoma cells. At 400 µg mL^{-1}, GPP reached a maximal inhibition of 33.62% while CP inhibited 43% of T98G adhered cells.

CONCLUSIONS

GPP, a pectin isolated from gabiroba fruit (*Campomanesia xanthocarpa* (Mart.) O. Berg) and the commercial pectin (CP), decreased significantly the cell viability of a highly aggressive human glioblastoma cell line (T98G). The biological mechanisms behind this effect are under investigation.

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