



EXTRAÇÃO DO LICOPENO DO BAGAÇO DE LARANJAS PIGMENTADAS CULTIVADAS EM SANTA CATARINA

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INTRODUCTION

Pigmented oranges, such as the Cara Cara variety, exhibit a reddish coloration due to the presence of lycopene, which is concentrated in the fruit's pulp. Lycopene is a carotenoid with antioxidant, anticancer, and immunomodulatory properties of high commercial value. On the other hand, orange pulp represents an agro-industrial byproduct. The aim of this study was to evaluate the potential of the pulp from Cara Cara oranges cultivated in Santa Catarina as a source of lycopene.

MATERIAL AND METHODS

Cara Cara oranges were collected at the Epagri experimental station in Itajaí (SC) during June and July of 2022, 2023, and 2024. The samples were peeled, the juice was extracted, and the pulp was lyophilized for subsequent grinding in a knife mill. The dried pulp powder was analyzed for desiccation loss, and 0.036 g was extracted with 4 mL of acetone under magnetic stirring for three different durations: 30 minutes, 1 hour, and 1.5 hours. The extraction solvent was renewed, and the three extracts were combined, evaporated under warm air, and reconstituted with 10 mL of methanol. The lycopene concentration was determined by high-performance liquid chromatography (HPLC) using a Shimadzu LC-20A chromatograph with isocratic elution (40% acetonitrile and 60% isopropanol), a 1.0 mL/min flow rate, a Phenomenex Luna C18 column, and a DAD detector (472 nm) at

30°C. An analytical curve was prepared using lycopene (Sigma) dissolved in methanol. The lycopene content was determined using the regression equation of the analytical curve.

RESULTS

The HPLC method revealed a peak at 4.8 minutes, corresponding to lycopene, when compared to the standard in a 10-minute run, with good peak resolution. The method demonstrated linearity between 0.45 and 5.4 µg/mL of lycopene ($y = 18123x - 13900$), with an R^2 value of 0.9862. The lycopene content in the samples analyzed by HPLC was 0.013%, 0.01%, and 0.025% for the samples collected in 2022, 2023, and 2024, respectively. In contrast, in other fruits such as tomatoes, acetone extraction yielded a lycopene content of 0.008% (UV 473 nm).

CONCLUSIONS

The pulp of Cara Cara oranges cultivated in Santa Catarina proves to be a potential source of lycopene. Future studies may explore optimization strategies for extraction to facilitate the application of this compound in the food and pharmaceutical industries.

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