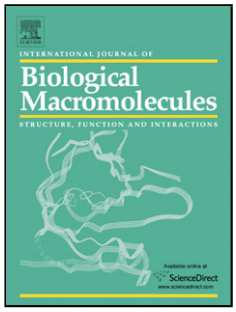

Title: Characterization, antioxidant and antiglycation properties of polysaccharides extracted from the medicinal halophyte *Carpobrotus edulis* L

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<AT>Characterization, antioxidant and antiglycation properties of polysaccharides extracted from the medicinal halophyte *Carpobrotus edulis* L.
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<ABS-HEAD>Highlights► Ultrasonic extraction of CEP were carried for the first time. ► BBD was applied to optimize the extraction conditions for CEP ► Highest CEP yield agrees closely with the predicted yield. ► CEP are a low methoxyl pectic polysaccharides. ► CEP showed strong antioxidant and antiglycation activities at 10 mg/mL.

<ABS-HEAD>Abstract

<ABS-P>In this study, Box-Behnken design was used to optimize the ultrasonic extraction of *Carpobrotus edulis* polysaccharides (CEP), and the effect of time, extraction temperature and water to material ratio was evaluated. Optimum conditions were 1.77 h, 78.0 °C and 33.04 mL/g to improved CEP yield (7.84%), which is in good agreement with the predicted yield 7.77%. Then, the physico-chemical, antioxidant and antiglycation properties of optimized CEP were studied, and the total sugar and galacturonic acid content were 89.7 and 63.2%, respectively. The composition of neutral monosaccharide was arabinose, xylose, rhamnose and mannose in the molar percentage of 71.84, 14.80, 8.57, and 4.79%, respectively. In addition, (^{1}H, and ^{13}C) NMR and FTIR analyses confirmed the presence of uronic acids in the free and methyl ester forms with a degree of esterification of 31.27%. Therefore, this finding showed that CEP is a low methoxyl pectic polysaccharide, with an average molecular weight about 65,000 g/mol. Finally, the results indicated that CEP presents strong antioxidant activities *in vitro* (DPPH, chelating ability and reducing power), and significantly inhibits lipid peroxidation and the formation of fluorescent advanced glycation end products in glucose-BSA system model.
<KWD>Keywords: *Carpobrotus edulis*; Pectic polysaccharides; Ultrasonic extraction;

Antioxidant; Antiglycation

<H1>1. Introduction

Carpobrotus edulis (CE) is an edible halophyte plant traditionally used in sub-Saharan Africa as traditional medicine. CE is a colonial plant and an invader in coastal ecosystems of all areas [1-4]. Likewise, the plant is used for their medicinal properties and biological activities such as antiplatelet, antibacterial, hypolipidemic, antiglycation, anti-inflammatory and antiproliferative properties [2-5]. Polysaccharides are important functional elements in many foods and medicines and have attracted much attention in the biomedical field due to their large spectra of therapeutic properties and their low toxicity [6]. Polysaccharides are natural carbohydrate found in higher plants as principal structural elements of cell walls, and have been reported to play important roles as dietary free radical scavengers for oxidative damage prevention [7].