

Article

Antioxidant Status, Antidiabetic Properties and Effects on Caco-2 Cells of Colored and Non-Colored Enriched Extracts of Sweet Cherry Fruits

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Abstract: This study aimed to compare three different extracts of *Saco* sweet cherry, namely the non-colored fraction, colored fraction, and total extract concerning phenolic composition, antioxidant and antidiabetic potential, and erythrocytes' protection and effects on Caco-2 cells. Twenty-two phenolic compounds were identified using high-performance liquid chromatography with diode-array detection. Hydroxycinnamic acids were the most predominant in both the non-colored fraction and total extract, while cyanidin-3-*O*-rutinoside was the main anthocyanin found in the colored fraction. The total extract was the most effective against 1,1-diphenyl-2-picrylhydrazyl, nitric oxide, and superoxide radicals, and in the inhibition of α -glucosidase enzyme. The colored fraction revealed the best activity against hemoglobin oxidation and hemolysis. Regarding to Caco-2 cells, the colored extract exhibited the highest cytotoxic effects, while the total extract was the most efficient in protecting these cells against oxidative damage induced by *tert*-butyl hydroperoxide.

Keywords: sweet cherry; anthocyanins; non-colored phenolics; antioxidant activity; erythrocytes protection; Caco-2 cells

1. Introduction

Phenolic compounds are widely distributed in nature and present strong antioxidant properties [1]. It is believed that their presence in the daily diet exerts a beneficial effect on human health, being associated with the decrease of oxidative stress-related disorders' occurrence [1,2]. Furthermore, phenolic compounds reduce the rate of oxidative processes by acting as reducing agents, hydrogen donors, singlet oxygen quenchers, and metal chelators, inhibiting the propagation of oxidizing chain reactions caused by free radicals and protecting the human body against oxidative damage [3,4].

Recently, special attention has been paid to the use of plants and fruit extracts in the cosmetic, food, and pharmaceutical industries due to their richness in phenolic compounds [5,6]. The extractions to obtain fractions rich in bioactive substances are preferentially carried out using water–alcohol mixtures, often including ethanol or methanol as extraction solvents, given their affinity with both lipophilic and hydrophilic bioactive molecules. Ethanol is the most commonly used solvent because it is economical, reusable, and unlike methanol, is non-toxic [5].

Extracts of sweet cherry (*Prunus avium* Linnaeus (L.)) have been subjected to several studies due to their properties as health promoters [7–9]. Therefore, sweet cherry berries may have a great potential in the management of obesity, diabetes, and related comorbidities [10]. Although these fruits