12º Encontro de Química dos Alimentos

Composição Química, Estrutura e Funcionalidade: A Ponte Entre Alimentos Novos e Tradicionais

12th Meeting on Food Chemistry

Bridging Traditional and Novel Foods: Composition, Structure and Functionality

Abstracts

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Antioxidant activity and cytotoxic effects of polar extracts from saffron (*Crocus sativus* L.) flowers

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Saffron (*Crocus sativus* L.) flower is composed of six purple tepals, three yellow stamens and a white filiform style ending in a stigma with three threads, which only represents less than 10% (w/w) of the flower weight. Nevertheless, saffron is cultivated for the stigma of its flowers which, after being dried, is the most valued spice [1]. For each kg of this spice, about 63 kg of floral bio-residues are produced, which so far are not exploited, being usually thrown away. However, the floral bio-residues were reported as having high phenolic content and bioactive properties, such as antioxidant, antityrosinase, antidepressant, antinociceptive, anti-inflammatory, antifungal and arterial pressure reducer activities [2]. In view of the reported bioactivity, it is important to study the cytotoxic effects of saffron [3]. Furthermore, it is a well-known fact that the effectiveness of bioactive compounds extraction from plants, as well as their corresponding activity, is highly dependent on factors such as different types of solvent, solvent-to-solid ratios and specially the solvent polarity [4]. In the present work, the antioxidant activity of different polar extracts (ethanol, ethanol:water 1:1 *v/v*, and water) of saffron was evaluated using different *in vitro* assays (2,2-diphenyl-1-picrylhydrazyl radical-scavenging activity, ferric reducing reducing power and inhibition of β-carotene bleaching assay). In addition, the cytotoxicity of the extracts was also evaluated in Caco-2 (ATCC® HTB-37™) cultures by using MTT (3-[4,5-dimethylthiazol-2-yl]-2,5 diphenyltetrazolium bromide) assay. All samples proved to have antioxidant activity, despite the higher effectiveness of the hydroalcoholic extract. Up to the assayed concentrations, none of the extracts showed cytotoxicity against Caco-2 cell lines. Accordingly, saffron flowers might be used in different applications such as the development of food supplements or pharmaceutic related products.

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