

Extended Abstract

Chemical Composition and Antioxidant Activity of Some Widely Consumed Fruit Juices [†]

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Fruit juices are widely consumed due to their high content of vitamins (mainly vitamin C) and phenolic compounds, which act as natural antioxidants [1]. It is well known that phenolic compounds act as free radical scavengers and metal chelators, and that they increase the activity of the endogenous antioxidant defense system (catalase, superoxide-dismutase, glutathione peroxidase, etc.) [1]. The aim of our study was the phytochemical screening and evaluation of the antioxidant capacity of simple or mixed (with herbal products—dried ginger or fresh peppermint leaves—or other fruits—oranges or pomegranate) lemonade. The above mentioned herbal products and fruits have a wide variety of therapeutic properties, such as antibacterial, anti-inflammatory, hypolipidemic and hypoglycemic activities [2–4].

The samples consisted of fresh juices prepared using lemons only or lemons mixed with oranges, pomegranate, ginger or peppermint. The lemonades were encoded as follows: LS (simple lemonade), LP (pomegranate lemonade), LO (orange lemonade), LG (ginger lemonade), and PP (peppermint lemonade). Phytochemical screening was carried out based on qualitative (specific chemical reactions and thin-layer chromatography—TLC) and quantitative (spectrophotometric determination of total phenolic content, phenolcarboxylic acids, flavones, and anthocyanidins) assays. The antioxidant activity was determined based on the scavenger capacity towards the 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical and was expressed as EC₅₀ (the concentration of the tested lemonades, expressed in microliters, that provided 50% inhibition of the free radical activity). All analyzed lemonades were shown to be important sources of flavones, tannins, phenolcarboxylic acids, and proanthocyanidins; besides these compounds, LP also contains anthocyanidins. TLC analysis revealed the presence of caffeic acid in all analyzed lemonades, while rutin was present in LS, LG, and LP. Regarding the quantitative assays, the flavone content (expressed as rutin equivalents) decreased as follows: LP > LG > LS > PP. Peppermint (16.87 mg/mL) and pomegranate (12.12 mg/mL) lemonades had the highest content of phenolcarboxylic acids (expressed as caffeic acid equivalents). The total phenolic content (expressed as tannic acid equivalents) decreased as follows: LP > LR > LS > LG > PP. According to our results, pomegranate lemonade had the best antioxidant capacity.

The analyzed lemonades were shown to be important sources of bioactive compounds with antioxidant activity.

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