VOLATILE AND PHENOLIC PROFILE OF MEDITERRANEAN HERBAL INFUSIONS

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Aqueous herbal extracts have attracted attention since they can be consumed in a daily basis as infusions. Many plant extracts are extensively used in traditional diet and popular medicine [1,2]. Their therapeutic actions are assigned to biologically active polyphenol components, such as flavonoids and phenolic acids, which possess antioxidant activities [3]. However, scarce literature exists on the volatile fraction of herbal teas [4]. The aim of this study was to investigate both volatile and phenolic profile of five herbal infusions widely used in the Mediterranean diet. 2 g of aromatic and medicinal herbs namely chamomile, dittany, lemon balm, rosemary and sage, were steeped in 200 mL (1 cup) of hot water (85°C, 15 min). Infusions were extracted three times with petroleum ether. Moreover, plants were subjected to hydrodistillation in order to examine the corresponding essential oil. Total phenolic content (in terms of caffeic acid) was determined using a Folin-Ciocalteu assay, while antioxidant activity was evaluated with the ABTS and DPPH assay. Infusions were rich in phenolic compounds, values ranging from 8.1 to 195.2 mg caffeic acid/200mL, possessing also a remarkable antioxidant activity. Lemon balm showed the highest values in total phenolic content (195.2 mg caffeic acid/200mL) and antioxidant activity (1321.7 µmol Trolox/mL for ABTS and 1206.3 µmol Trolox/200mL for DPPH). Identification and quantification of phenolic profile was achieved with LC-DAD-MS technique. The infusions were rich in phenolic acids and flavonoids. Rosmarinic acid was the compound found in all plants of the family Lamiaceae. Lemon balm infusion posses the highest content (29847.8 µg/200mL) and the one of rosemary the lowest (172.4 µg/200mL). The GC-MS analysis of the organic phase of herbal shows a different profile than that of the corresponding essential oil. The loss or absence of the most volatile compounds and particularly monoterpenic hydrocarbons and the enhancement in content of oxygenated terpenes and polar components is observed. The present study shows for the first an overall investigation in both volatile and phenolic compounds presented in Mediterranean herbal infusions.

KEYWORDS: Herbal infusions, Volatiles, Phenolic composition, Antioxidant activity

REFERENCES: