5th MoniQA International Conference

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Food and Health - Risks and Benefits

Book of Abstracts

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Antioxidant activity and nutritional value of *Mentha spicata* L.: a comparison between reserve and standard lots

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Currently, the consumption of tea and herbal infusions is increasing so much that its daily worldwide consumption is evaluated in more than three million cups. Therefore, in a competitive and sophisticated sector as the tea market, the innovation and development of new products is imperative (Hicks, 2009; Li et al., 2013). Nowadays, we have at our disposal a new range of emerging products, such as the designated "reserve lots" exclusively prepared by using the younger parts (apical leaves) of the plant collected in the hot summer months; the standard lots do not have these harvest specific requirements. In this perspective, the present study was accomplished to understand the differences between two lots of *Mentha spicata* L. (spearmint) for infusion preparation, widely used due to its exquisite and outstanding flavour, as well as for its antioxidant properties (Goméz-Prieto et al., 2007). The nutritional value, the energetic contribution, and the antioxidant activity, as well as the bioactive compounds (phenolics and flavonoids) content of both standard and reserve lots, were evaluated.

The nutritional value was determined through the infusion sugars content, once these were the only nutrients present in the preparations; the analysis was carried out by high performance liquid chromatography coupled to a refraction index detector (HPLC-RI). The presence of fructose, glucose and sucrose was detected in very low concentrations on both infusions, with the reserve lot revealing slightly higher amounts. Sucrose was the most abundant sugar, present in a concentration of 5.9 mg/100 mL in the standard lot and 8.4 mg/100 mL in the reserve lot. Total sugars and energy were 13.2 mg/100 mL and 53 cal/100 mL, respectively, in the standard lot; and 16.9 mg/100 mL and 67.4 cal/100 mL, respectively, in the reserve lot.

The antioxidant activity of the infusions was assessed by different assays (free radicals scavenging activity, reducing power and lipid peroxidation inhibition), whereas total phenolics and flavonoids were estimated by colorimetric assays. The reserve lot presented the lowest EC50 values, corresponding to a higher antioxidant activity, in all the assays performed (152 to 336 μg/mL), in comparison to the standard lot (173 to 546 μg/mL). Both the infusions revealed higher potential in lipid peroxidation inhibition, in concentrations of 173 (standard tot) and 152 μg/mL (reserve lot), followed by reducing power (301 and 198 μg/mL, respectively) and free radicals scavenging activity (546 and 336 μg/mL, respectively). In agreement with the antioxidant activity results, the amounts of total phenolics and flavonoids were higher in the reserve lot (2.86 and 0.378 mg gallic acid equivalents- GAE/mL) when compared to the standard lot (1.83 and 0.268 mg GAE/mL).

Overall, in our perspective, these results represent a major contribution to elucidate the consumer about the bioactive effects of new emerging tea products such as reserve lots, which actually showed a higher antioxidant activity.

Keywords: *Mentha spicata* L., antioxidant activity, nutritional value, reserve lot, standard lot.

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