CHARACTERIZATION OF GREEN TEA: EVALUATION OF GEOGRAPHICAL ORIGIN AND CONSERVATION DEGREE BASED ON E-NOSE AND CAPILLARY ELECTROPHORESIS ANALYSES

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Tea is the second most widely consumed beverage in the world after water and its regular intake is associated with improved human health. In the last decade, the potential of electronic nose (e-nose) technology in the characterization and quality monitoring of tea has been shown, demonstrating its ability to classify black tea aroma and flavor in different processing stages [1], to identify the geographical origin of black tea [2], and to rapidly identify different quality grades of green tea [3].

In the present study, green tea samples of different geographical origin (China and Japan) were analysed by means of a six-MOS (metal oxide semiconductor) e-nose (EOS835, SACMI Imola s.c.a.r.l.) to discriminate, though their volatile organic compounds (VOCs) composition, either their origin or the conservation level in terms of aroma. Additionally, the quality degree in terms of biological value (catechins content and composition) was assessed by means of Cyclodextrin-modified Micellar Electrokinetic Chromatography (CD-MEKC).

The obtained results show the ability of e-nose to discriminate green tea of different geographical origin. In addition, it was shown that conservation of green tea for a long storage time (2 years) greatly decreases its quality in terms of aroma and polyphenols content, while catechins epimerization was not observed. As polyphenol content and aroma are highly qualifying attributes for green tea, the combined approach shows potential for quality control applications at manufacturer level.

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