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## P15 Chemical Profile of Nutraceutical Formulations with Natural Preservatives

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Nutraceutical is a recent term, not having a formal regulatory definition, it was first defined by Stephen DeFelice as “food or part of a food that provides medical or health benefits, including the prevention and/or treatment of a disease”<sup>1</sup>. From early ages, the medicinal properties of plants were well known, and there are now many scientific studies that support such claims. *Aloe Arborescens* Mill., one of the most abundant species of the *Aloe* genus, native to South Africa having been imported into many countries as an ornamental and medicinal plant due to its biological effects (antimicrobial, anti-inflammatory and healing properties), has had its benefits proven by scientific studies<sup>2</sup>. Growing concerns about the quality and safety of food and pharmaceutical products leads to consumers preferring products with minimal added additives<sup>3</sup>. Thus, in line with consumer demand, the food industry has been working on uncovering natural preservatives.

The objective of this work was to study the influence of natural preservative ingredients (citric acid and chestnut flowers) on the chemical profile (composition in free sugars, organic acids, fatty acids and phenolic compounds) of a nutraceutical based on *Aloe arborescens* and honey.

Free sugars were identified by an HPLC-RI system, organic acids by UFLC-PDA, fatty acids by GC-FID and phenolic compounds by HPLC-DAD-ESI/MS. The results were compared with those obtained in the formulations with an artificial preservative (sodium benzoate) and with no preservative.

Regarding the results, in general, there were no significant differences between formulations. In the evaluation of hydrophilic compounds, three sugar molecules (fructose – 13 g/100 g fw; glucose – 12 g/100 g fw; trehalose – 0.3 g/100 g fw) and two organic acids (malic acid – 0.40 g/100 g fw; citric acid - 0.04 g/100 g fw) were found. Regarding the fatty acid profile, seventeen compounds were identified, especially palmitic (C16:0 37%), followed by stearic acid (C18:0 14%); all the other fatty acids were below 10%. Saturated fatty acids (SFA) were the most abundant group with 89%, followed by 7% of monounsaturated fatty acids (MUFA) and 4% polyunsaturated fatty acids (PUFA).

Regarding phenolic compounds, ten molecules were identified and quantified (two phenolic acids, three flavonoids, two aloins and three other anthraquinones), with a highlight for aloenin (flavonoid) as the major compound (0.14 µg/100 g fw).

The results obtained in this study allow us to conclude that the natural preservatives used have no influence on the chemical composition of the nutraceutical studied. However, further research is needed to conclude that these natural preservatives are a good alternative to sodium benzoate or any other synthetic preservative.

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