Vision of the Citrus Industry in Brazil

Mércia de Fátima M. Bettini

FlavorTec – Aromas de Frutas Ltda.Av. Bela Vista, 971, Pindorama, CEP 15830-000, SP, Brazil
mercia@flavortec.com.br

Keywords: Citrus peel oils, chromatographic analysis, by-products.

The citrus juice processing generates large amounts of by-products, almost 50 %, in the form of peel, segment membranes, rags, and seeds. Besides that, during juice concentration, volatile constituents contained on the vapour phase are condensed by the aroma recovery systems. The loss of these flavoring constituents results in a decrease of juice quality, unless these compounds are being reincorporated on it. The aroma recovery systems get two separated phases: essence oil or oil phase (OP) and aqueous essence or water phase (WP). The average yield of these products is very low; it is around 0.3 % for the peel oils (CPO), 0.05 % for the W P and 0.013 % for the OP, always in comparison to the fresh fruit. These products are rich in aldehydes, esters and other volatile compounds. As the storage and transportation of these products are expensive, the evaluation of concentration processes of these essences is of high interest. One of the objectives of this work is to explain the probable production of orange juice (FCOJ), as well the citrus oils production in the last ten years in Brazil. We will compare the yield of the orange products and also the variation costs for the different crops. From 2005 to 2015 the variation of the production quantities for these ten years was: FCOJ - 851,000 to 1,500,000 tons; CPOO - 24,104 to 40,863 tons; WP - 2,165 to 10,179 tons; OP - 2,980 to 1,560. By the commercial point of view, the total of citrus peel oils exported on these 10 years, generated in Million of USD: orange - 908, lemon/lime - 60 and tangerines - 58 (1,2). The citrus single oils and also the folded ones, as well some special light fractions, were evaluated and performed by chromatographic and sensorial analysis. The study of the special light fractions of these flavoring volatile compounds from the oil phase, obtained by fractional distillation, is another point of this work. By fractional distillation of the orange oil phase, high contents of fragrant compounds such as ethyl butyrate, from 460 to 92,000 mg l^{-1} and valencene, from 1,300 to 12,600 mg l^{-1} were obtained by GC evaluation. For lemon and lime oils, we found citral since 4.23 to 40.15 (area % by GC); for tangerines we found methyl anthranilate from 0.04 to 2.84 (area % by GC).

1. http://aliceweb.mdic.gov.br/, accessed in July 2015.
2. http://www.citrusbr.com/, accessed in July 2015.

ISBN: 978-85-66836-11-0