Title Analysis of grapefruit sulphur volatiles using SPME and pulsed flame photometric detection

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Abstract

Sulphur volatiles are major factors in the perceived aroma of grapefruit juice, GFJ. The objective of this study was to develop a procedure to concentrate, separate, identify and quantify the major volatile sulphur compounds, VSC's, in grapefruit juices. SPME parameters such as headspace atmosphere, fibre coating, extraction time and temperature were evaluated. High resolution capillary GC using ZB-5, DB-Wax and PLOT columns coupled with pulsed flame photometric detection, PFPD, were employed for separation and detection. Thirteen sulphur volatiles were identified including; hydrogen sulphide, sulphur dioxide, methanethiol, dimethyl sulphide, carbon disulphide, dimethyl disulphide, 2-methyl thiophene, 3-methyl thiophene, methional, dimethyl trisulphide, 3-mercaptohexylacetate, 2,8-epithio-*cis*-*p*-menthane and 1-*p*-menthene-8-thiol. Five additional VSC's were tentatively identified. Canned reconstituted GFJ had more total sulphur volatiles and a greater number than fresh GFJ. Hydrogen sulphide comprised over 80% of total sulphur volatiles in fresh GFJ but only 5% in canned GFJ.