Optimization of a HS-SPME/GC-MS of main odour-active compounds in guava (*Psidium guajava* L. var. Palmira ICA-1)

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The olfactometry analysis by GC-MS and multidimensional GC/GC-O detected 48 aroma active components in pink guava fruit[1]. AEDA analysis/GC-MS revealed (*Z*)-3-hexenal, hexanal, ethyl butanoate, 4-methoxy-2,5-dimethyl-3(2*H*)-furanone-MDF, 3-sulfanylhexyl acetate and cinnamyl acetate as important aroma compounds[2]. These compounds and acetaldehyde were identified like odour-active compounds in guava fruit by SPME and simultaneous distillation-extraction using GC and GC-MS[3]. GC-MS studies have been used as identification technique. The goal of this studie was to optimize the HS-SPME/GC-MS of main odour-active compounds in guava fruit. The fibers PDMS, CAR/PDMS, PDMS/DVB and DVB/CAR/PDMS were compared by logistic regression model using as response variables the contents of methyl benzoate and of MDF. Once the optimum fiber was selected, the most significant variables were studied by fractional factorial design for the HS-SPME procedure, using fresh pink guava fruit (pulp colour tone h^0 between 40,4 to 42,2) and assuming as response the content of acetaldehyde, (Z)-3-hexenal, hexanal, ethyl butanoate, MDF, methyl and ethyl benzoate, 3-sulfanylhexyl acetate and cinnamyl acetate. Finally, the most significant variables identified by fractional factorial design were optimized using a simplex mathematical model. The logistic regression model showed that the contents of methyl benzoate and of MDF were statistically different from zero and significantly contributed to the model. The probability was modeled for the DVB/CAR/PDMS fiber, higher concentrations were obtained with this fiber. The optimal values were: guava content 68,48%, aqueous NaCl 23%, extract volume 6,8 mL, extraction temperatura 35ºC, extraction time 34 min, HS saturation time 23 min, agitation speed 402 rpm, desorption time 6 min and fiber height in the injection port 3,6 cm.

Keywords: HS-SPME, GC-MS, optimization, volatiles, guava

Alimentos y bebidas

1 Jordán, M.J. et al. **2003**. *Journal of Agricultural and Food Chemistry, 51*, 1421-1426.

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