

CDSolutions

APPLICATIONS INFORMATION USING ADVANCED SAMPLE HANDLING TECHNOLOGY

Analysis of Chocolate Products by Dynamic Headspace with the CDS TDA 9300 Autosampler

Thermal Desorption/Dynamic Headspace can be used to effectively characterize many food raw materials as well as finished products. The volatile components are purged from the sample chamber and collected onto a trap for transfer to the GC for analysis. Quantitation of profile components can also be done. This application note will focus on the analysis of milk chocolate (raw material) and a finished chocolate product (peppermint pattie).

Samples of ground milk chocolate and peppermint pattie (~500mg) were placed into separate 12mm x 100mm test vessels. The tubes were then placed into individual headspace stations on the CDS TDA 9300 Autosampler. The TDA 9300 was interfaced to an Agilent 6890 Gas Chromatograph, and an Agilent 5973 MSD was used as the detector. The chocolate sample was desorbed at 60°C and 90°C. The peppermint pattie was desorbed at 40°C.

Figure 1 shows the total ion chromatogram profile of milk chocolate desorbed at 60°C. Note the elution of Acetic(1), Butanoic (2), Hexanoic (3), and Benzoic acids (4) respectively. Figure 2 shows the same sample heated to 90°C for 10minutes. Acid elution continues, but note the Vanillin peak (5) at approximately 14 minutes. Figure 3 shows the chromatogram of the ground peppermint pattie. Compound elutions include Acetic Acid (1), Eucalyptol (2) Menthone (3), t-Menthone (4), Menthol (5), and Menthyl Acetate (6).

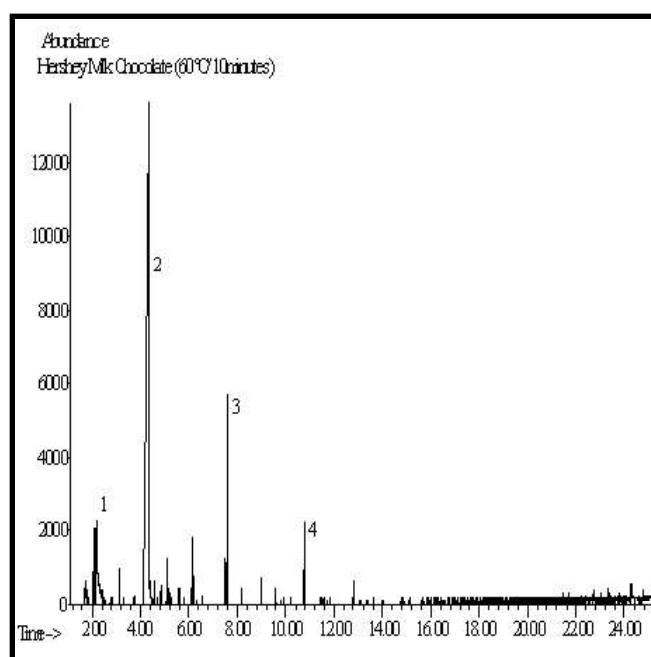


Figure 1. Milk chocolate desorbed at 60°C.

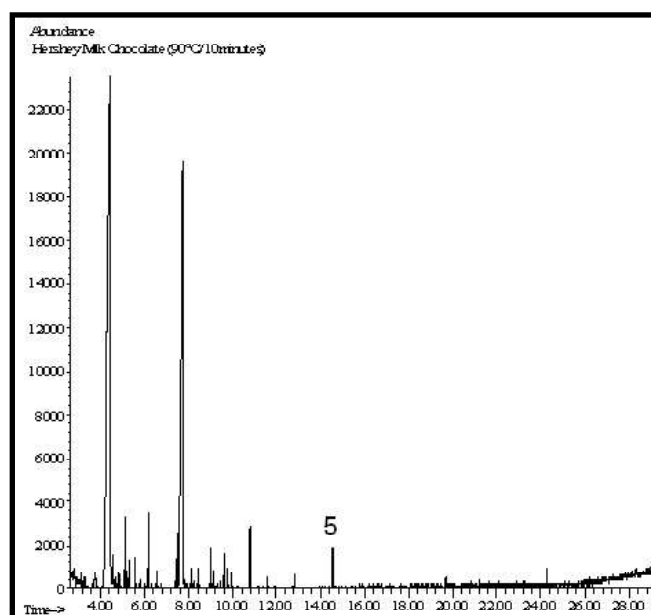


Figure 2. Milk chocolate desorbed at 90°C.

CDS TDA 9300 Conditions

Valve Oven: 275°C
Transfer Line: 275°C
Tube Heat: 40°C, 60°C, 90°C (10 minutes)
Trap Heat: 275°C/10 minutes

Interconnect Line: 275°C

GC/MS Conditions

Carrier: He
Column: HP-5MS- 30m x .25mm x 0.25µm
Detector: MSD

GC Program:

Initial: 40°C/2min
Rate: 10°C to 295°C
Final: 295°C for 2min

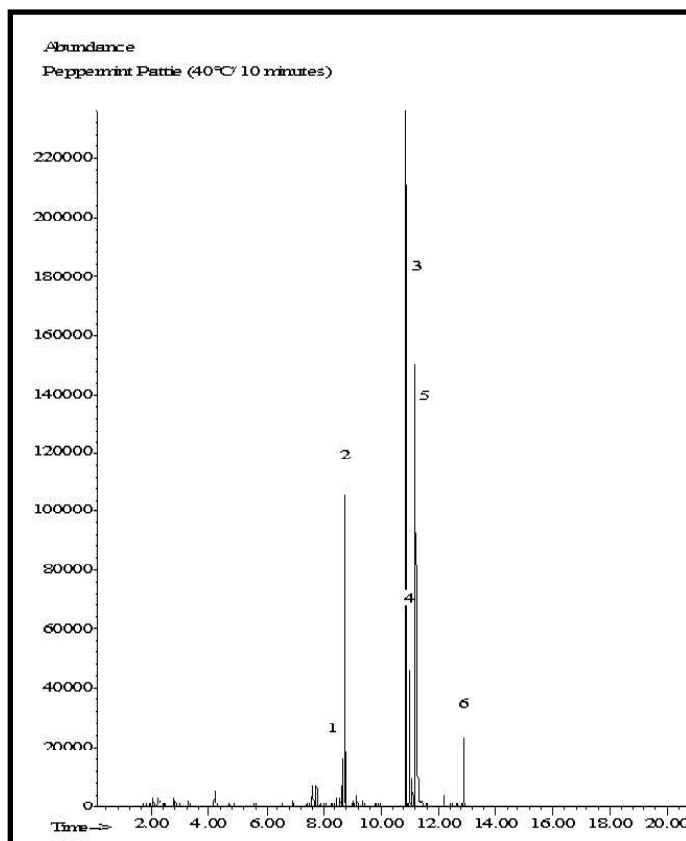


Figure 3. Peppermint patty desorbed at 40°C.

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