

Analysis of cheese flavor compositions by GC-MS

1 Instruments and reagents

GC-MS3100 gas chromatograph/mass spectrometer; 1uL microinjector; cheese flavor sample

2 Analysis conditions

MS conditions: EI source; ion source temperature: 150°C; electron energy: 70eV; scanning mode: full scan; scanning range: 28.5u~400u; scanning period: 0.6s; interface temperature: 260°C; multiplier high voltage: 1140V.

GC conditions : Equity-5 (30m×0.25mm×0.25um) silica capillary column; injection port temperature: 260°C; split sampling; sample volume: 0.1uL; split ratio: 50:1; precolumn pressure: 60kPa; purge rate: 2ml/min; column temperature program: hold at 35°C for 1.5 min, ramp up to 270 °C at 5°C/min and then hold for 3 min.

3 Analysis results

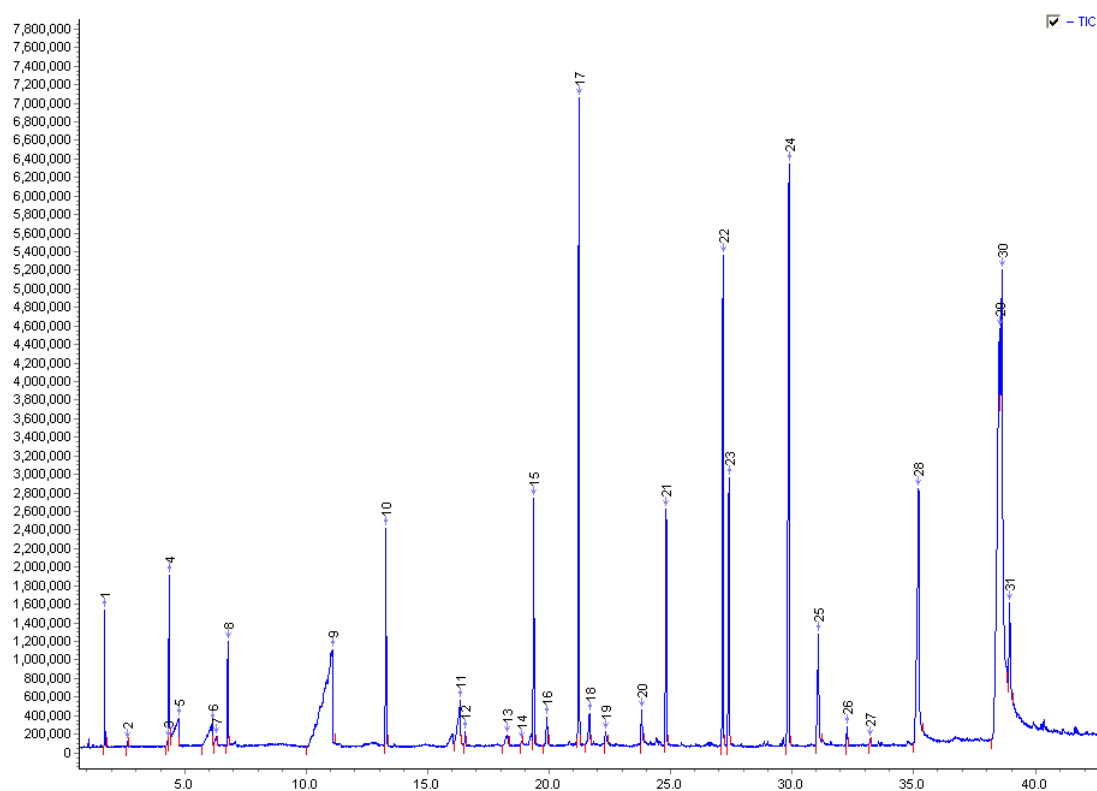


Figure 1 Cheese flavor's TIC chromatogram

Table 1 Analysis results of cheese flavor's volatile components

Peak No.	Retention time, min	Name	CAS	Molecular formula	relative amount, %	similarity degree, %
1	1.70	Ethyl Acetate	141-78-6	C ₄ H ₈ O ₂	1.17	90
2	2.63	2-Butanone, 3-hydroxy-	513-86-0	C ₄ H ₈ O ₂	0.06	84
3	4.30	Hexanal	66-25-1	C ₆ H ₁₂ O	0.02	72
4	4.36	Butanoic acid, ethyl ester	105-54-4	C ₆ H ₁₂ O ₂	2.09	94
5	4.75	Butanoic acid	107-92-6	C ₄ H ₈ O ₂	1.54	86
6	6.13	Butanoic acid, 3-methyl-	503-74-2	C ₅ H ₁₀ O ₂	1.59	89
7	6.32	Butanoic acid, 2-methyl-	116-53-0	C ₅ H ₁₀ O ₂	0.27	90
8	6.77	2-Heptanone	110-43-0	C ₇ H ₁₄ O	1.45	90
9	11.08	Hexanoic acid	142-62-1	C ₆ H ₁₂ O ₂	15.96	90
10	13.28	2-Nonanone	821-55-6	C ₉ H ₁₈ O	3.39	93
11	16.35	Octanoic Acid	124-07-2	C ₈ H ₁₆ O ₂	2.07	90
12	16.55	Octanoic acid, ethyl ester	106-32-1	C ₁₀ H ₂₀ O ₂	0.20	91
13	18.28	2-Decenal, (E)-	3913-81-3	C ₁₀ H ₁₈ O	0.49	85
14	18.86	Nonanoic acid	112-05-0	C ₉ H ₁₈ O ₂	0.07	83
15	19.36	2-Undecanone	112-12-9	C ₁₁ H ₂₂ O	4.00	94
16	19.90	2,4-Decadienal	2363-88-4	C ₁₀ H ₁₆ O	0.77	91
17	21.23	Butanoic acid, 2-butoxy-1-methyl-2-oxoethyl ester	7492-70-8	C ₁₁ H ₂₀ O ₄	11.22	91
18	21.66	n-Decanoic acid	334-48-5	C ₁₀ H ₂₀ O ₂	0.84	88
19	22.32	Vanillin	121-33-5	C ₈ H ₈ O ₃	0.33	86
20	23.81	Ethyl Vanillin	121-32-4	C ₉ H ₁₀ O ₃	0.76	90
21	24.81	2H-Pyran-2-one, tetrahydro-6-pentyl-	705-86-2	C ₁₀ H ₁₈ O ₂	4.88	91
22	27.14	Dodecanoic acid, ethyl ester	106-33-2	C ₁₄ H ₂₈ O ₂	8.13	92
23	27.39	2H-Pyran-2-one, 6-hexyltetrahydro-	710-04-3	C ₁₁ H ₂₀ O ₂	5.62	93
24	29.86	2H-Pyran-2-one, 6-heptyltetrahydro-	713-95-1	C ₁₂ H ₂₂ O ₂	13.92	90
25	31.07	Tetradecanoic acid	544-63-8	C ₁₄ H ₂₈ O ₂	3.11	92
26	32.25	Isopropyl Myristate	110-27-0	C ₁₇ H ₃₄ O ₂	0.40	85
27	33.20	1,2-Benzenedicarboxylic acid,bis(2-methylpropyl) ester	84-69-5	C ₁₆ H ₂₂ O ₄	0.11	79
28	35.19	n-Hexadecanoic acid	57-10-3	C ₁₆ H ₃₂ O ₂	10.15	91
29	38.52	9,12-Octadecadienoic acid (Z,Z)-	60-33-3	C ₁₈ H ₃₂ O ₂	1.02	88
30	38.63	Oleic Acid	112-80-1	C ₁₈ H ₃₄ O ₂	2.49	90
31	38.94	Octadecanoic acid	57-11-4	C ₁₈ H ₃₆ O ₂	1.88	86