GT037

GL Sciences Inc.

Simple Concentration and Analysis of Fresh Flower Fragrance Components - Using Sorptive Media MonoTrap

Preliminary processing procedure

One fresh flower (Mizusen)

↓

Collection (passive)
MonoTrap DCC18 x 5 sheets

In ambient air for 24 hours

↓

Solvent extraction

1000 µL of diethyl ether
5 minutes of ultrasonication

↓

Concentration

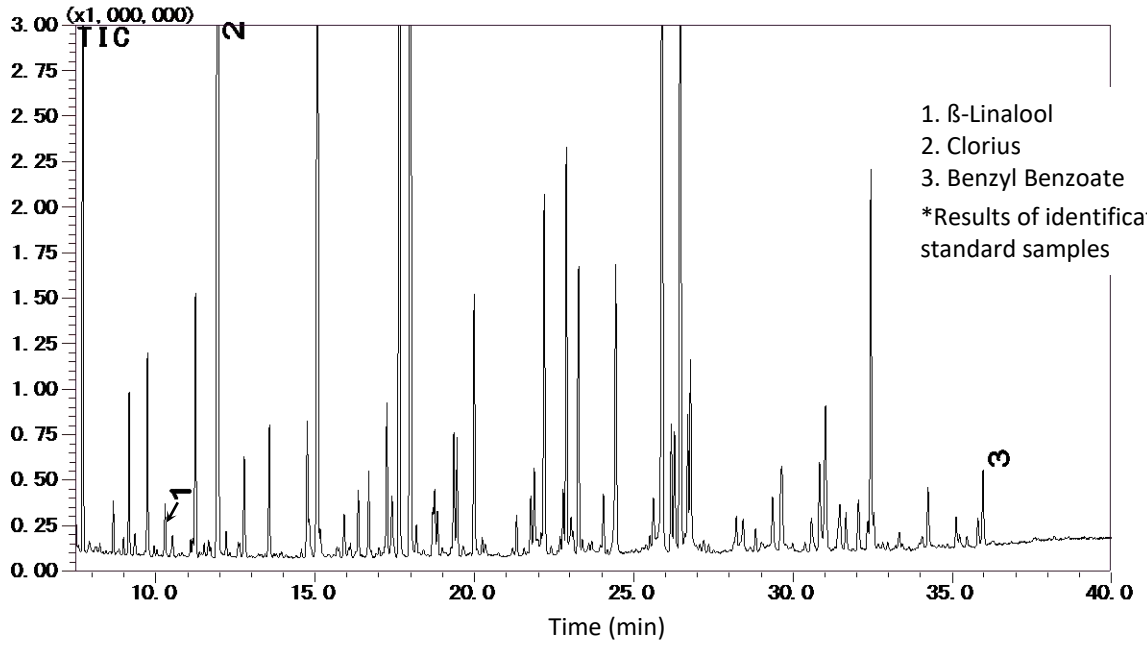
With nitrogen purging
Concentrate to a few µL

↓

GC/MS

GC Conditions

System : GC - MS
Column : InertCap Pure-WAX
0.25 mm I.D. x 30 m df = 0.25 µm
Col. Temp. : 70 ˚C - 4 ˚C /min - 220 ˚C
Carrier Gas : He 90 kPa
Injection : Split 1:10
250 ˚C
Detection : MS Scan (*m/z* 50-450)
Sample Size : 1 µL



1. ß-Linalool
2. Clorius
3. Benzyl Benzoate

*Results of identification with standard samples

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Sample name and retention index

Component	RI	Component	RI	Component	RI
1. Methanol	362	24. 2-Methyl-1-propanol (Isobutyl alcohol)	624	45. 3-Methyl-1-butanol (Isoamyl alcohol)	731
2. Ethanol	439				
3. Acetonitrile	486	25. Tetrahydrofuran	630	46. 4-Methyl-2-pentanone(MIBK	739
4. Acetone	488	26. 2-Methoxyethanol (Methyl cellosolve)	630	47. Pyridine	748
5. 2-Propanol(Isopropyl alcoh	488			48. 1-Pentanol(Amyl alcohol)	764
6. n-Pentane	500	27. 1,2-Dimethoxyethane	650	49. Isobutyl acetate	772
7. Diethyl ether	504	28. 1,1,1-Trichloroethane	650	50. Toluene	774
8. Ethyl formate	515	29. 1,2-Dichloroethane	650	51. N,N-Dimethylformamide	781
9. 1,1-Dimethoxymethane	515	30. 2,2-Dimethoxypropane	650	52. 2-Hexanone(MBK)	789
10. 1,1-Dichloroethylene	518	31. Methyl isopropyl keton	658	53. Propionaldehyde diethyl ace	811
11. Methyl acetate	524	32. Isopropyl acetate	658	54. n-Butyl acetate	811
12. Dichloromethane	530	33. 1-Butanol	658	55. Dimethyl sulfoxide(DMSO)	834
13. 1-Propanol	550	34. Benzene	666	56. Chlorobenzene	858
14. trans-1,2-Dichloroethylene	560	35. Carbon tetrachloride	666	57. N,N-Dimethylacetamide	870
15. tert-Butyl methyl ether	562	36. Cyclohexane	666	58. Ethylbenzene	870
16. Nitromethane	564	37. 2-Methyltetrahydrofura	672	59. p-Xylene	879
17. 2-Butanone(MEK)	597	38. 2,2,4-Trimethylpentan	690	60. m-Xylene	879
18. 2-Butanol	600	39. n-Heptane	700	61. o-Xylene	905
19. n-Hexane	600	40. Trichloroethylene	704	62. Anisole	926
20. Diisopropyl ether	600	41. 2-Ethoxyethanol	712	63. Cumene	936
21. cis-1,2-Dichloroethylene	611	42. n-Propyl acetate	712	64. N-methyl-2-pyrrolidone	1050
22. Ethyl acetate	611	43. 1,4-Dioxane	712	65. 1,2,3,4-Tetrahydronaphthale	1194
23. Chloroform	619	44. Methylcyclohexane	731	66. Sulfolane	1232

Xylene used is a mixture of m Xylene, p Xylene, o Xylene, and Ethylbenzene.

Retention indices are...

This value is based on the carbon number of straight-chain alkanes and is calculated using the retention time of each component and hydrocarbon.

In this application, a temperature-rise analysis was made . The formula is shown below.

$$\text{Retention index } I = 100 \times \frac{TR - tR(Z)}{TR(Z+1) - tR(Z)} + 100 \times Z$$

TR = retention time of the target component

T R(Z) = retention time of straight-chain alkanes that precede the components of interest

TR(Z+1) = retention time of straight-chain alkanes emerging after the component of interest.

Z = number of carbon in the straight-chain alkane with retention time tR(Z)

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