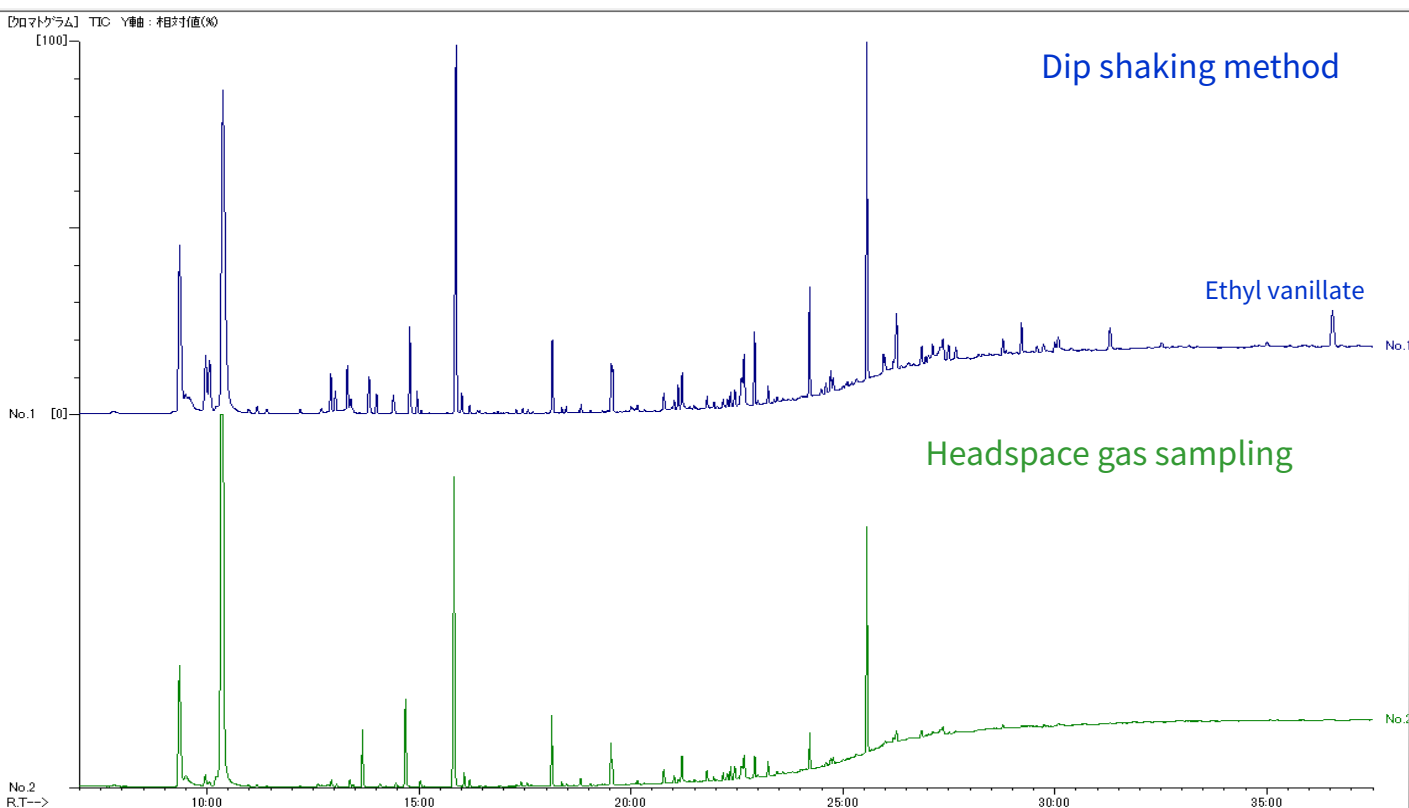
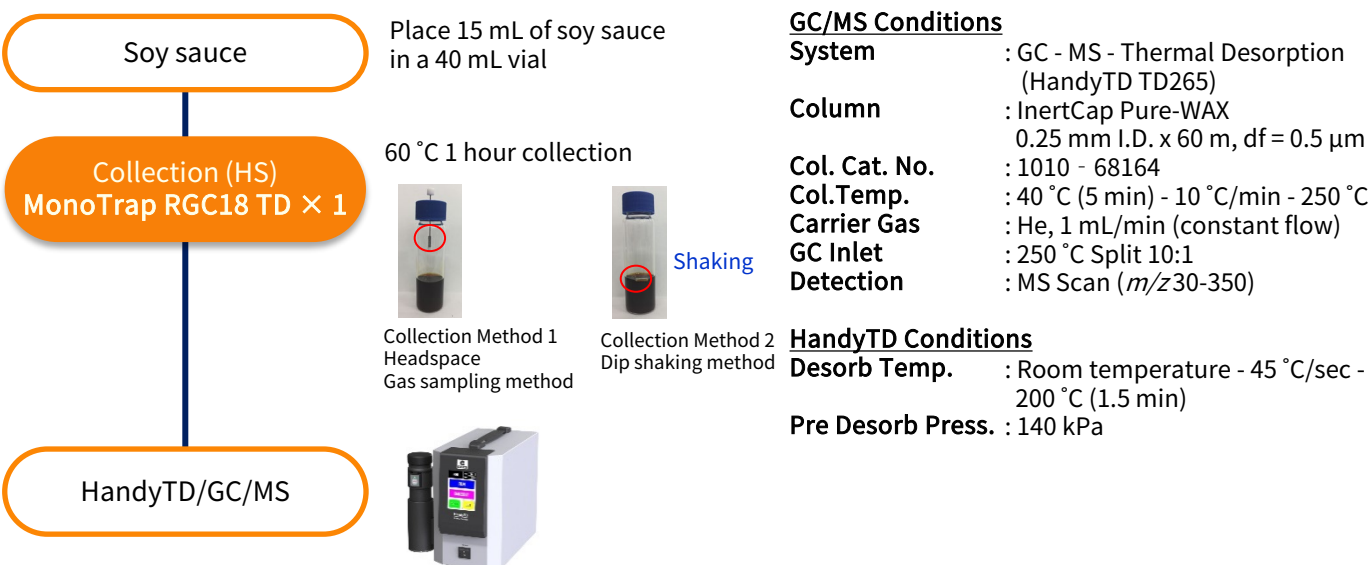


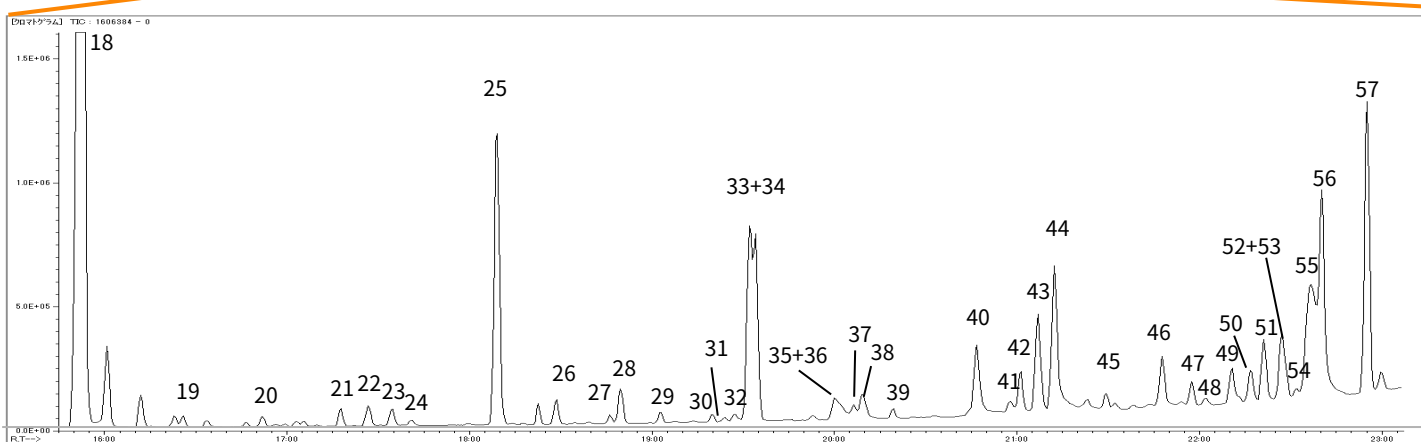
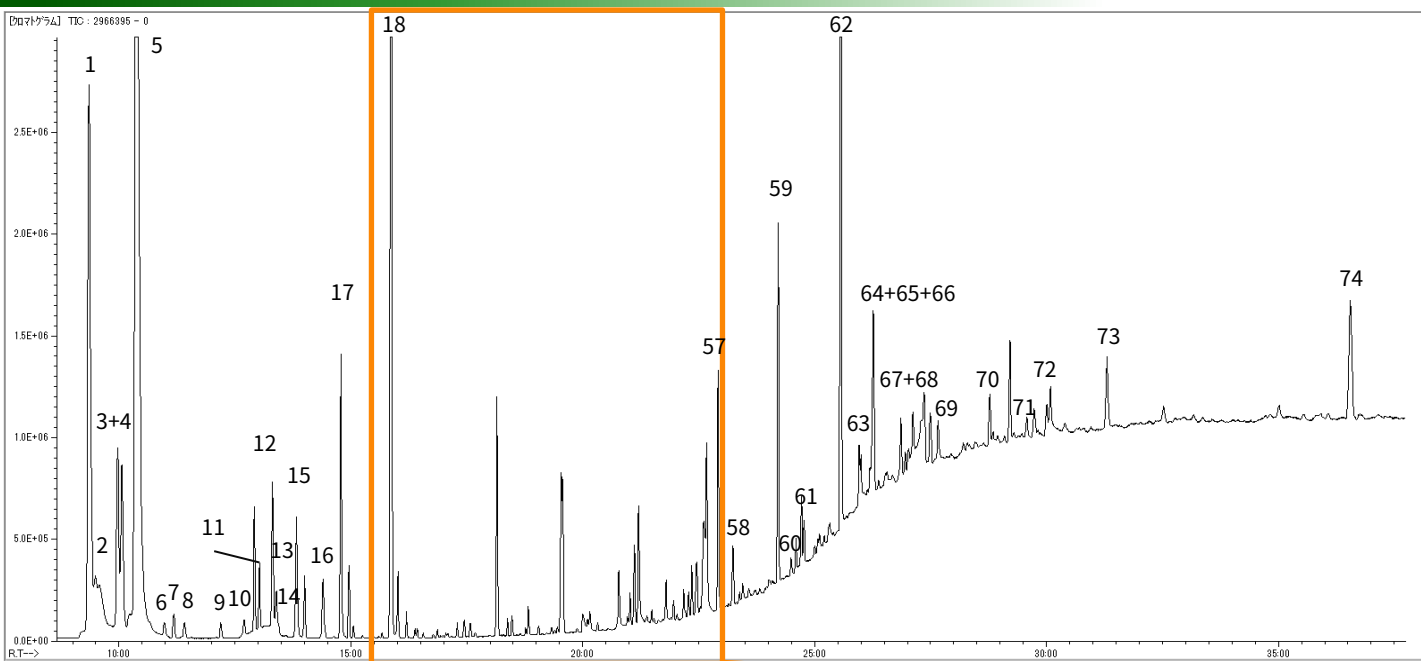
Concentration Analysis of Volatile Components of Soy Sauce - Comparative Collection Methods Using MonoTrap RGC18 TD

MonoTrap RGC18 TD and HandyTD TD265 were used for simple screening and analysis of volatile components in soy sauce, two different collection methods were compared. MonoTrap RGC18 TD is used to collect volatile compounds on a trapping agent, HandyTD TD265 is then used to introduce those compounds into a GC by thermal desorption. The two collection methods studied here used headspace gas sampling and dip shaking. Headspace method - volatile components were collected in a 60 °C oven by placing the MonoTrap in the headspace of the container so that it does not come into contact with soy sauce. Dip shaking method - volatile components were collected by shaking with a constant temperature shaker at 60°C with the MonoTrap in soy sauce. The two collection methods were used to detect many of the important flavor components of soy sauce. The dip shaking method improved the sensitivity for almost all components compared with headspace gas sampling. In addition, high-boiling components such as ethyl vanillate, which were not detected by headspace gas sampling, were detected by the dip shaking method.

Preliminary processing procedure



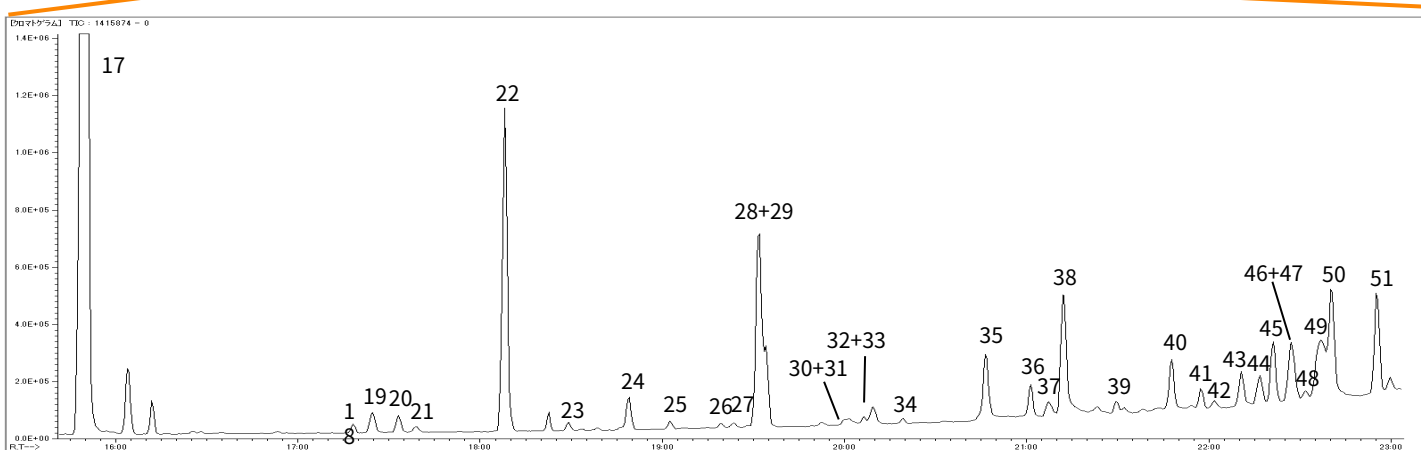
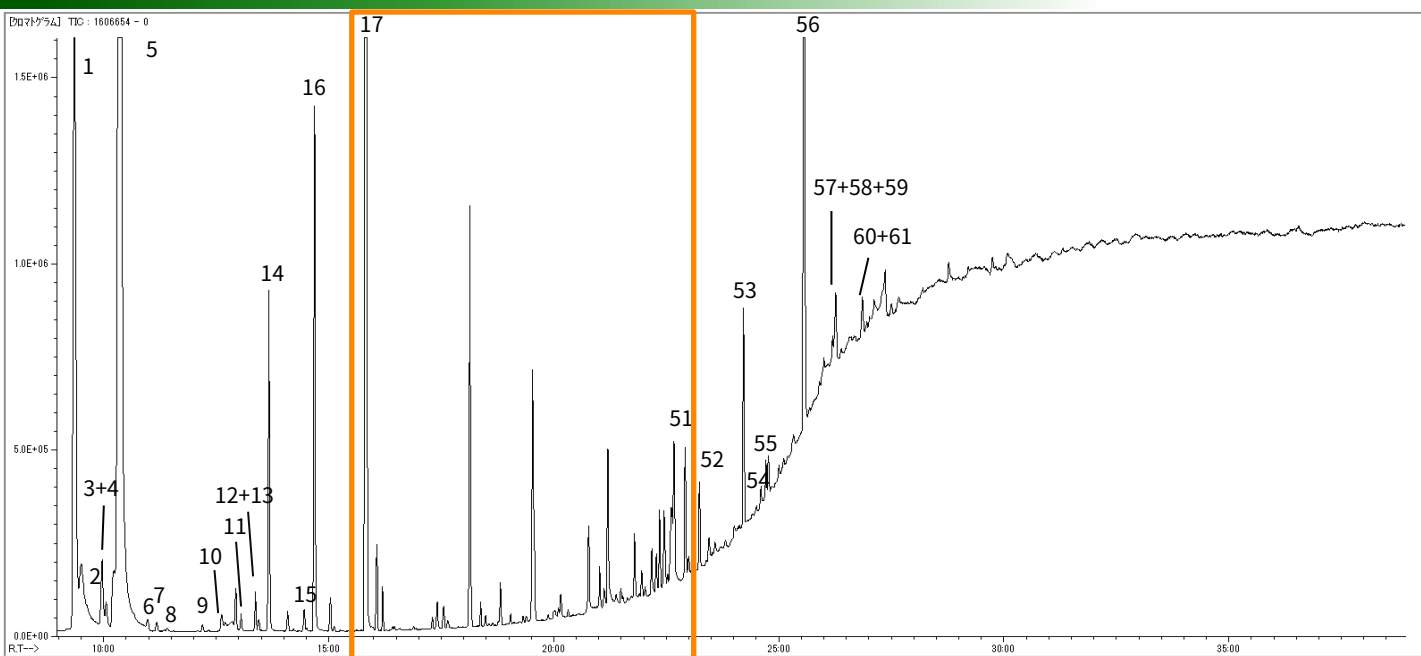
Results of dip shaking method



* Standard samples are not used for qualitative analysis.
Results from a library search.

- | | | |
|-------------------------------------|--|---|
| 1. Ethylacetate | 26. (5-Methyl-2-furyl)methanethiol | 51. Furfuryl alcohol |
| 2. Methyl alcohol | 27. 3-Octanol | 52. Isovaleric acid |
| 3. Methyl butyraldehyde | 28. 2-(1-Ethoxyethoxy)-3-methyl-1,4-butanediol | 53. 2-methyl butanoic acid |
| 4. Isovaleraldehyde | 29. 2-Ethyl-6-methylpyrazine | 54. Butyrolactone |
| 5. Ethyl alcohol | 30. Trimethylpyrazine | 55. Phenyl acetaldehyde |
| 6. Ethyl propanoate | 31. 4-Hydroxy-3-hexanone | 56. Diethyl succinate |
| 7. Ethyl isobutyrate | 32. Isovaleric anhydride | 57. Ethyl benzoate |
| 8. Isobutanol diethyl acetal | 33. Acetic acid | 58. Methionol |
| 9. Isobutyl acetate | 34. 1-Octen-3-ol | 59. Ethyl phenyl acetate |
| 10. Ethyl butyrate | 35. Methional | 60. Phenethyl acetate |
| 11. Ethyl methylbutyrate | 36. Furfural | 61. Ethyl nicotinate |
| 12. Ethyl isovalerate | 37. Trimethyl-2-hexene | 62. Phenylethanol |
| 11. Butyl acetate | 38. 2-Ethyl-3,5-dimethylpyrazine | 63. 2-Phenyl-2-butenal |
| 14. Isovaleraldehyde diethyl acetal | 39. Tetramethylpyrazine | 64. 2-Acetylpyrrole |
| 15. Isobutyl alcohol | 40. 2,3-Butanediol | 65. Maltol |
| 16. Isoamyl acetate | 41. Hexano-dibutyrin | 66. 2-Methyl-3-methoxy-4H-pyran-4-one |
| 17. 1-Butanol | 42. Ethyl 2-hydroxyhexanoat | 67. Benzyl methyl ether |
| 18. Isoamyl alcohol | 43. Benzaldehyde | 68. Ethylguaiaico |
| 19. Ethyl caproate | 44. 2,3-Butanediol | 69. Ethyl 2-(acetylamino)-4-methylpentanoat |
| 20. 3-Octanone | 45. Ethyl methylthiopropionate | 70. 2-Methoxy-4-vinylphenol |
| 21. Difurfuryl ether | 46. 5-(Pentyloxy)-2-pentene | 71. 2,6-Dimethoxyphenol |
| 22. Acetoin | 47. Ethyl levulinate | 72. Phenylpyridine |
| 23. Ethylene glycol propyl ether | 48. Methylbutyrolactone | 73. Isocitric acid lactone |
| 24. Hydroxyacetone | 49. 5-Isopropyl-2,2-dimethyltetrahydrofuran | 74. Ethyl vanillate |
| 25. Ethyl lactate | 50. Valerolactone | |

Results of headspace gas sampling



* Standard samples are not used for qualitative analysis.
Results from a library search.

1. Ethylacetate
2. Methyl alcohol
3. Methyl butyraldehyde
4. Isovaleraldehyde
5. Ethyl alcohol
6. Ethyl propanoate
7. Ethyl isobutyrate
8. Isobutanol diethyl aceta
9. Isobutyl acetate
10. Ethyl butyrate
11. Ethyl methylbutyrate
12. Ethyl isovalerate
13. Butyl acetate
14. Isobutyl alcohol
15. Isoamyl acetate
16. 1-Butanol
17. Isoamyl alcohol
18. Difurfuryl ether
19. Acetoin
20. Ethylene glycol propyl ether
21. Acetol

22. Ethyl lactate
23. (5-Methyl-2-furyl)methanethiol
24. 2-(1-Ethoxyethoxy)-3-methyl-1,4-butanediol
25. 2-Ethyl-6-methylpyrazine
26. Trimethylpyrazine
27. 4-hydroxy-3-Hexanone
28. Acetic acid
29. 1-Octen-3-ol
30. Methional
31. Furfural
32. Trimethyl-2-hexene
33. 2-Ethyl-3,5-dimethylpyrazine
34. Tetramethylpyrazine
35. 2,3-Butanediol
36. Ethyl 2-hydroxyhexanoat
37. Benzaldehyde
38. 2,3-Butanediol
39. Ethyl methylthiopropanoate
40. 5-(Pentyloxy)-2-pentene
41. Ethyl levulinate

42. Methylbutyrolactone
43. 5-Isopropyl-2,2-dimethyltetrahydrofuran
44. Valerolactone
45. Furanmethanol
46. Isovaleric acid
47. Methyleneethylacetic acid
48. Butyrolactone
49. Phenylacetaldehyde
50. Diethyl succinate
51. Ethyl benzoate
52. Methionol
53. Ethyl phenyl acetate
54. Phenethyl acetate
55. Ethyl nicotinate
56. Phenylethanol
57. 2-Acetylpyrrole
58. Maltol
59. 2-Methyl-3-methoxy-4H-pyran-4-one
60. Benzyl methyl ether
61. Ethylguaiacol

Product used

MonoTrap RGC18 TD



Cat.No. :1050-74201

* Supplied individually packaged in ampoules.

MonoTrap Trial Kit for TD for thermal desorption



Portable thermal desorber HandyTD TD265



Cat.No. : 2709-80000

InertCap Pure-WAX



Size : 0.25 mm I.D. x 60 m, df = 0.5 μ m
Cat.No. : 1010-67164

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