3.4 Simultaneous Analysis of Pesticides (1) - GCMS

•Explanation

Residual Pesticides on vegetables and fruits are a matter of concern. There are various kinds of pesticides used, among which approximately 200 are subjected to regulations. A good way of analyzing these pesticides is simultaneous GCMS measurement.

Here, an example of a simultaneous analysis of 86 pesticides using GCMS is shown.

•Analytical Conditions

Instrument : GCMS-QP5000
Column : DB-1 0.25mm × 30m df=0.25μm
Col.Temp. : 50˚C(2min)-130˚C(20˚C/min)
-300˚C(3˚C/min)(7min)
Inj.Temp. : 280˚C
I/F Temp. : 280˚C
Carrier Gas : 120kPa(2min)-250kPa(2kPa/min)

	Component	Molecular weight
1	Metamidophos	141
2	Dichlorvos	220
3	Propamocarb	188
4	Acephate	183
5	Isoprocarb	193
6	Fenobucarb	207
7	Ethoprophos	242
8	Chlorproham	213
9	Bendaiocarb	223
10	Dimethipin	210
11	α-BHC	288
12	Dimethoate	229
13	Thiometon	246
14	β-BHC	288
15	γ-BHC	288
16	σ-BHC	288
17	Terbufos	288
18	Diazinon	304
19	Ethiofencarb	225
20	Etrimfos	292
21	Pirimicarb	238
22	Metribuzin	214
23	Bentazone	254
24	Methylparathion	263
25	Carbaryl	201
26	Heptachlor	370
27	Fenitorthion	277
28	Methiocarb	225
29	Dichlofluanid	332
30	Esprocarb	265
31	Pirimiphos-methyl	305
32	Thiobencarb	257
33	Malathion	330
34	Aldrin	362
35	Fenthion	278
36	Parathion	291
37	Chlorpyrifos	349
38	Diethofencarb	267
39	Captan	299
40	Heptachlor epoxide	386
41	Pendimethalin	281
42	α-Chlorfenvinphos	358
43	Pyrifenox	294

	Component	Molecular weight
44	Chinomethionat	234
45	β-Chlorfenvinphos	358
46	Quinalphos	298
47	Phenthoate	320
48	Triadimenol	295
49	Vamidothion	287
50	Trichlamide	339
51	Methoprene	310
52	Flutolanil	323
53	Dieldrin	378
54	Prothiophos	344
55	Myclobutanil	288
56	p,p'-DDE	316
57	Pretilachlor	311
58	Endrin	378
59	Fensulfothion	308
60	Chorobenzilate	324
61	p,p'-DDD	318
62	o,p'-DDT	352
63	Mepronile	269
64	Lenacil	234
65	Edifenphos	310
66	Captafol	347
67	p,p'-DDT	352
68	Propiconazol	341
69	EPN	323
70	Dicofol	370
71	Phosalone	367
72	Mefenacet	298
73	Amitraz	293
74	Cyhalothrin	449
75	Bitertanol	337
76	Pyridaben	364
77	Inabenfide	338
78	Permethrin	390
79	Cyfluthrin	363
80	Cypermethrin	415
81	Flucythrinate	451
82	Fenvalerate	419
83	Fluvalinate	502
84	Pyrazoxyfen	437
85	Deltamethlrin	503
86	Tralomethrin	661

Chart 3.4.1 List of pesticides and molecular weights

3.4 Simultaneous Analysis of Pesticides (2) - GCMS

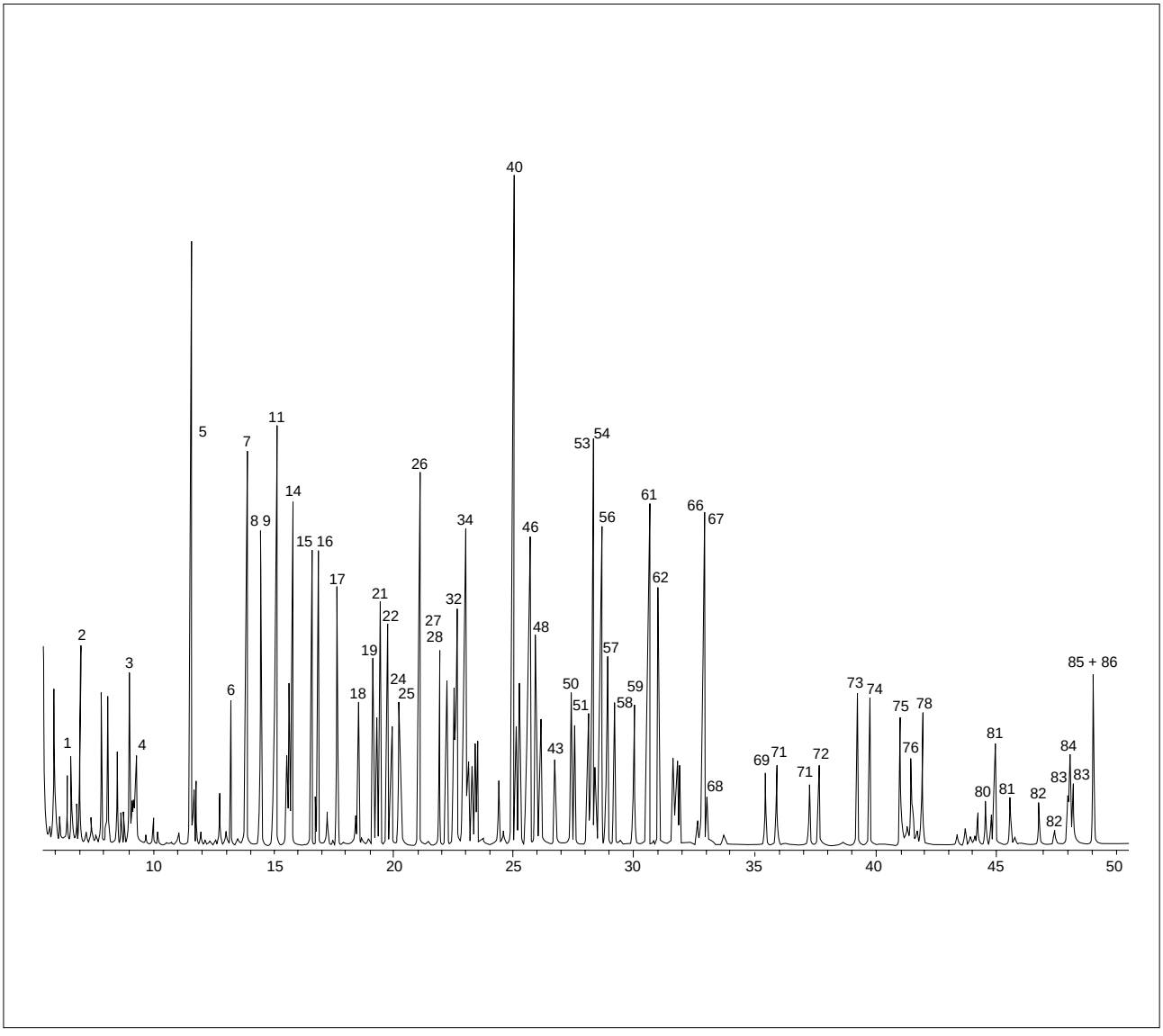

Fig. 3.4.2 Analysis of 86 pesticides using DB-1