SHIMADZU APPLICATION NEWS

LAAN-A-G-E005

● GAS CHROMATOGRAPHY

No.G216

Analysis of Residual Pesticides in Agricultural Products using ECD-2010 (Part 2)

Lately, public concern regarding the safety of food products has become extremely heightened due to the problem of pesticide residues on imported vegetables and unregistered pesticides being used domestically. Given this situation, the Ministry of Health, Labour and Welfare of Japan is expected to expand to 714 the number of agricultural chemicals regulated with respect to their content in food products. In issue G214 of the Application News, we focused on pesticides that are often detected in imported vegetables and domestic vegetables. In this issue, we will introduce some fundamental data regarding organochlorine pesticides that are among the 244 pesticides currently regulated, other than the substances addressed in the previous issue.

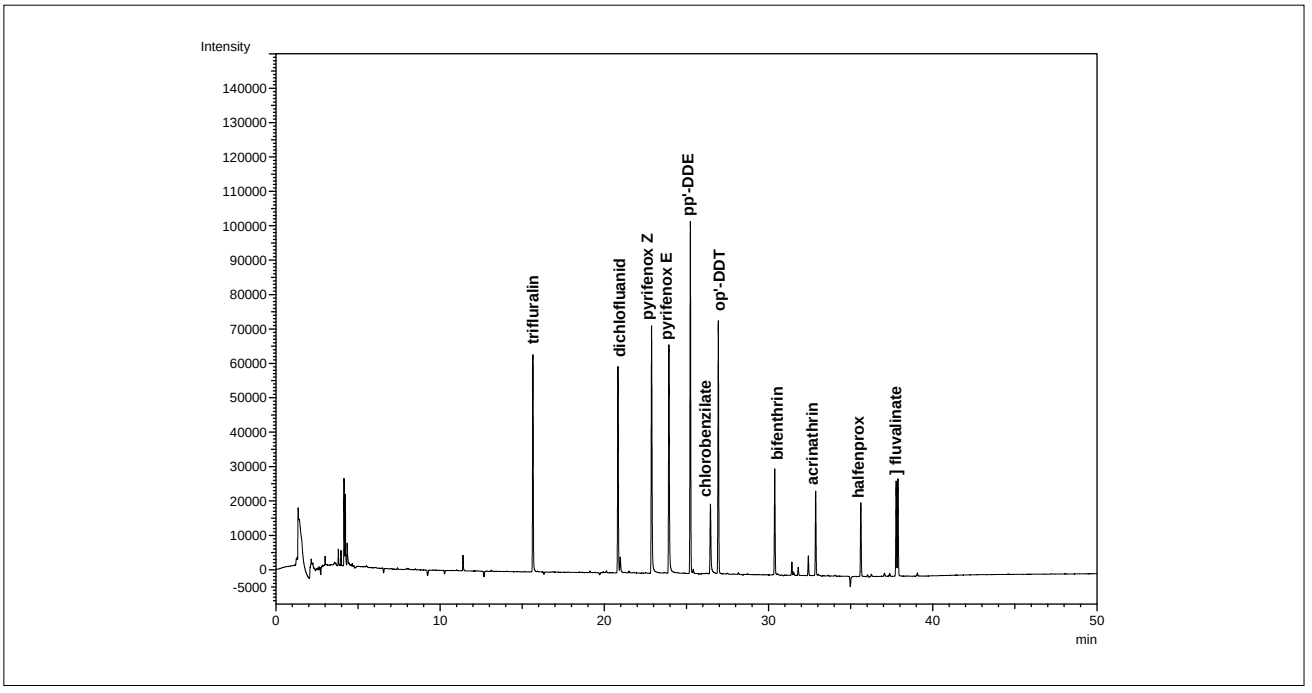

Fig.1 Chromatogram of 11 Organochlorine Pesticides detected by ECD-2010 (1μL splitless injection of 10ppb standard solution)

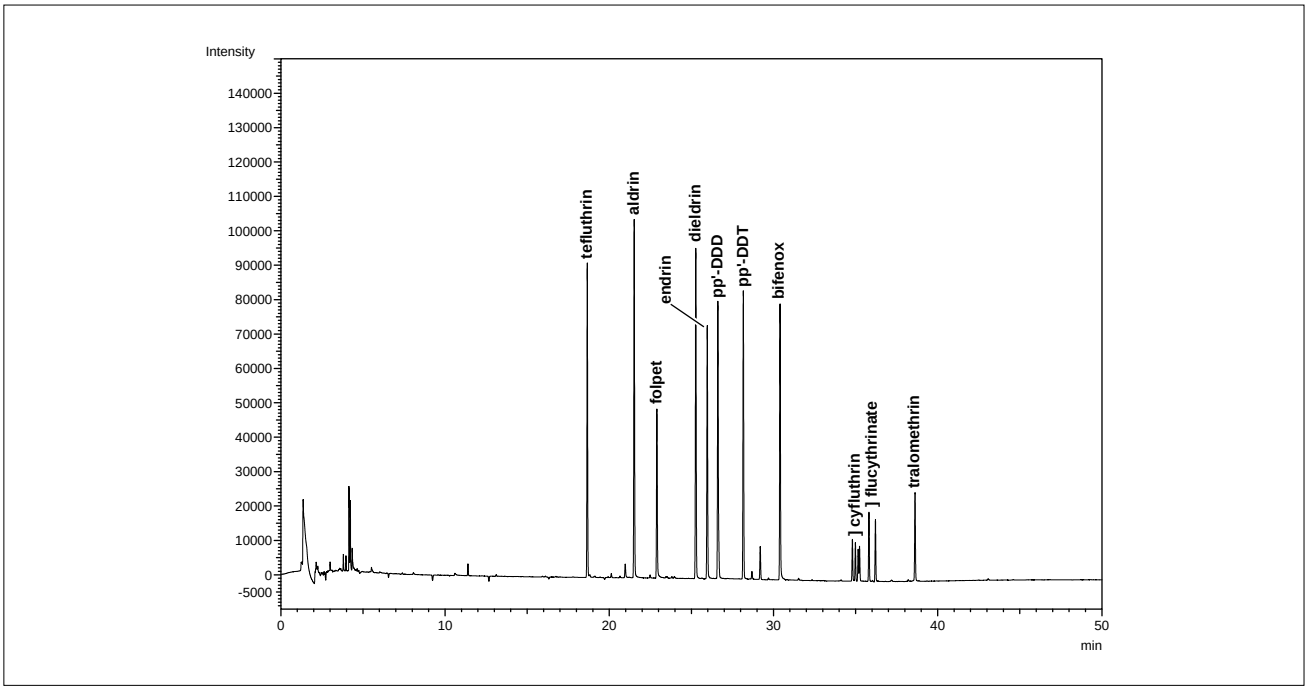

Fig.2 Chromatogram of 11 Organochlorine Pesticides detected by ECD-2010(1μL splitless injection of 10ppb standard solution)

Table 1 lists the minimum detectable quantities (absolute values) obtained from the results in Fig.1 and 2, and the minimum detectable quantities per second, which was calculated by dividing each minimum detectable quantity by the corresponding peak width.

Note: These values could vary depending on analytical conditions (column and detector status, etc.), so they are not guaranteed values.

The calibration curves for each substance are shown in Fig.3.

Table 1 Minimum Detectable Quantities

	MDQ (fg)	MDQ per Second (fg/s)
acrinathrin	115	38
aldrin	24	7
bifenox	36	11
bifenthrin	74	23
chlorobenzilate	116	29
cyfluthrin	183	54
dichlofluanid	45	14
dieldrin	19	6
endrin	29	9
flucythrinate	157	50
fluvalinate	103	32
folpet	57	16
halfenprox	136	41
op'-DDT	31	9
pp'-DDD	30	9
pp'-DDE	19	6
pp'-DDT	30	9
pyrifenox E	48	14
pyrifenox Z	41	11
tefluthrin	23	8
tralomethrin	86	25
trifluralin	35	12

Note: The primary peak was used for calculating substances containing isomers.

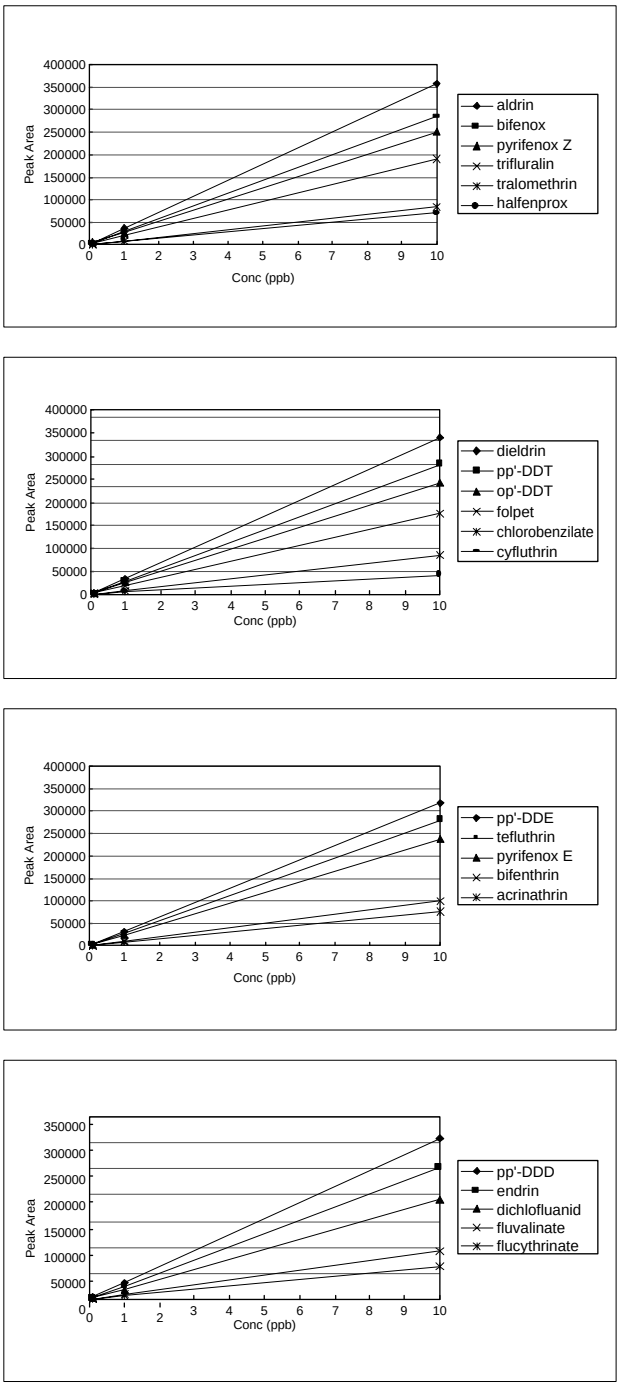

Fig.3 Linearity of Calibration curves

Table 2 Analytical Conditions for Fig.1 and 2

Model	: GC-2010, ECD-2010
Column	: Rtx-1 30m × 0.25mm I.D. df =0.25µm
Column Temp	: 50˚C(1min)-20˚C/min-120˚C -5˚C/min-300˚C
Injection Temp	: 250˚C
Detector Temp	: 330˚C
Carrier Gas	: He 150kPa (Constant Pressure)
Detector	: ECD (Makeup Gas : N_2 30mL/min)
Injection	: Splitless 1µL

SHIMADZU

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