

Analysis of Residual Pesticides in Agricultural Products using FPD-2010 (Part 3)

Under Japan's Food Sanitation Law, currently regulation values are established for 244 pesticides, among which 166 pesticides are designated to be qualified or quantified using GC. Application News G214 introduced analysis data for pesticides

frequently detected in imported and domestically produced vegetables. This Application News introduces basic data regarding organophosphorus pesticides that were not previously reported.

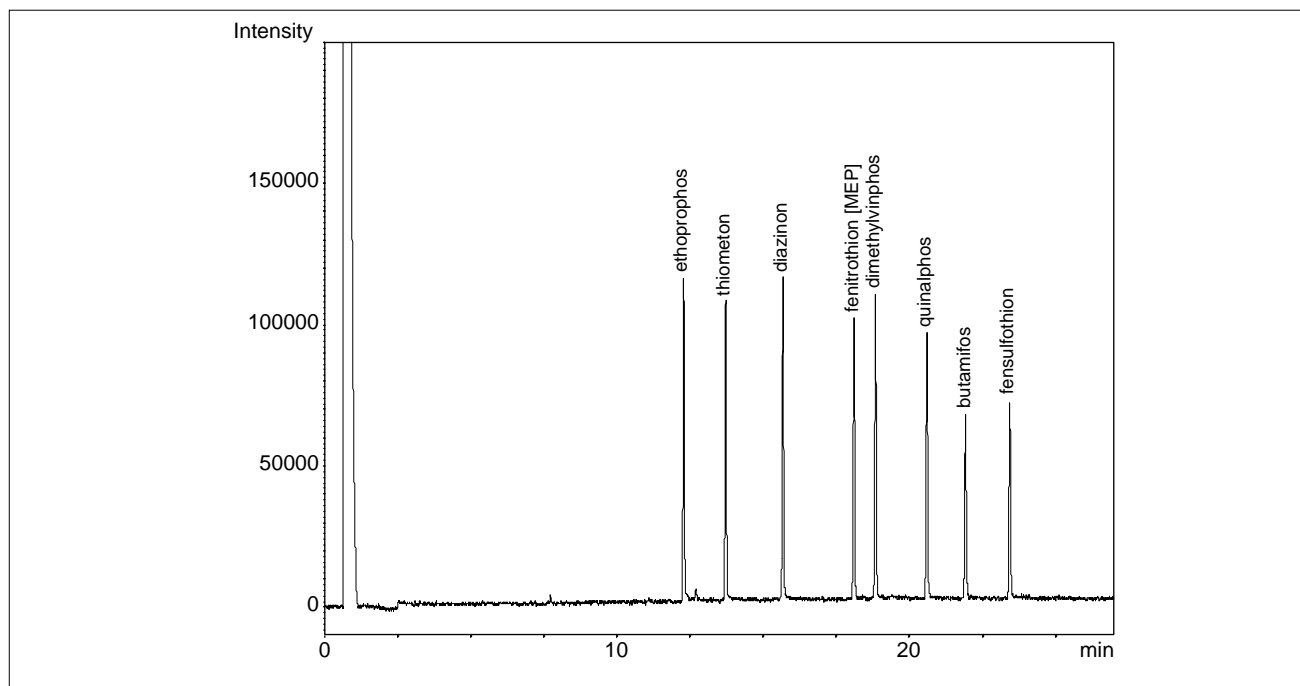


Fig.1 Chromatogram of 8 Organophosphorus Pesticides detected by FPD-2010 (2 μ L splitless injection of 100ppb standard solution)

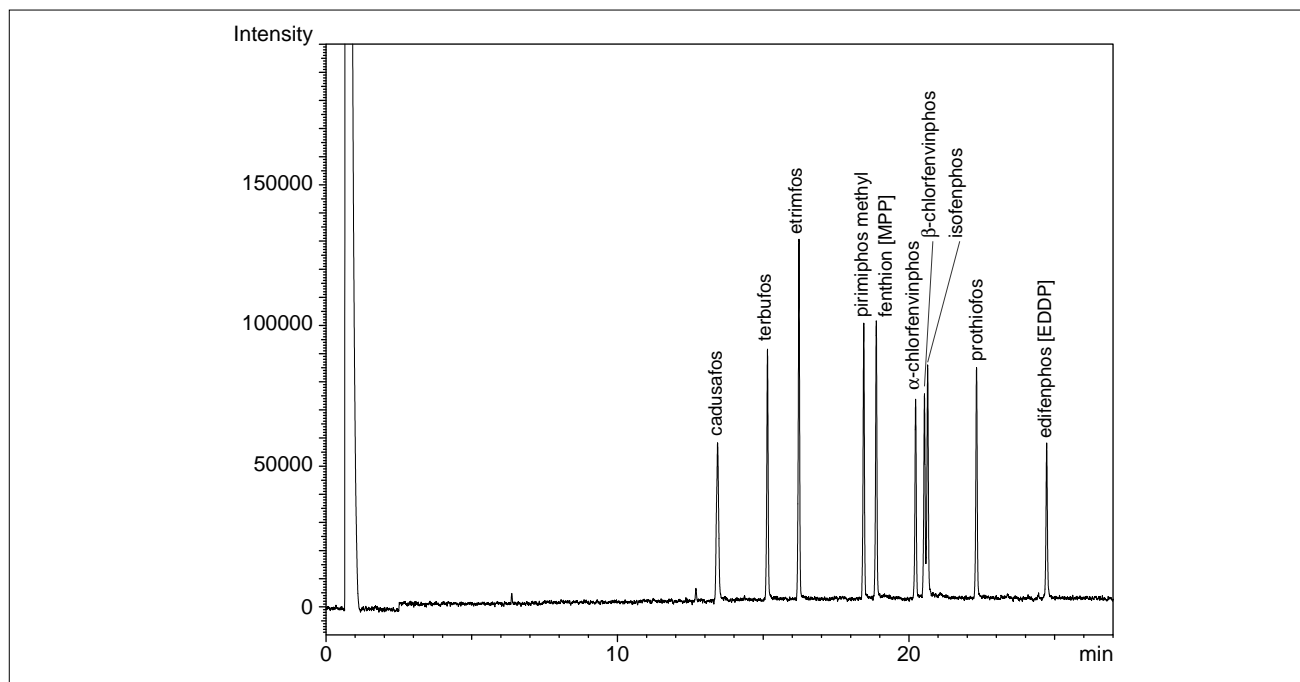


Fig.2 Chromatogram of 10 Organophosphorus Pesticides detected by FPD-2010 (2 μ L splitless injection of 100ppb standard solution)

Table 1 summarizes the minimum detectable quantities (absolute values) obtained from the results in Fig.1 and 2, and the minimum detectable quantities per second, obtained by dividing the minimum detectable quantities by the peak width.

* These values will vary depending on the analytical conditions (condition of the column and detector), and are not guaranteed.

Fig.3 shows the calibration curve for each substance.

Table 1 Minimum Detectable Quantity

Pesticides	MDQ (pg)	MDQ per Second (pg/s)
butamifos	23	6.6
cadusafos	27	5.0
α -chlorfenvinphos	21	6.6
β -chlorfenvinphos	21	6.3
diazinon	13	4.2
dimethylvinphos	14	4.4
edifenphos [EDDP]	28	8.3
ethoprophos	13	4.4
etrimfos	12	3.6
fenitrothion [MEP]	15	4.7
fensulfothion	22	6.8
fenthion [MPP]	15	4.7
isofenphos	18	5.3
pirimiphos methyl	15	4.8
prothiofos	18	5.4
quinalphos	16	5.1
terbufos	17	5.2
thiometon	14	4.5

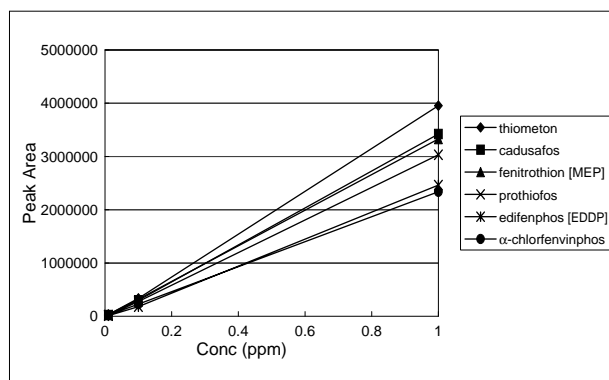
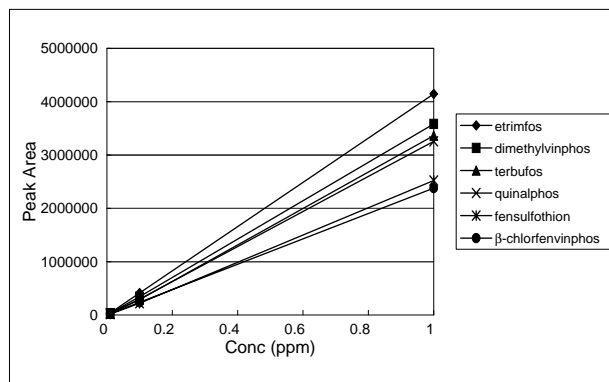
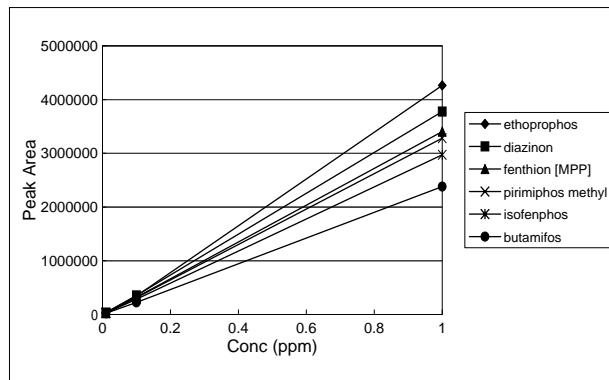


Fig.3 Calibration Curves

Table 2 Analytical Conditions for Fig.1 and 2

Model	: GC-2010, FPD-2010
Column	: Rtx-1 30m \times 0.25mm I.D., $df = 0.25\mu\text{m}$
Column Temp	: 70°C (1min)-20°C/min-120°C -5°C/min-300°C
Injection Temp	: 250°C
Detector Temp	: 350°C
Carrier Gas	: He 42.5cm/s (Constant linear velocity mode)
Detector	: FPD (H ₂ : 80mL/min, Air : 120mL/min)
Injection	: Splitless 2 μL (Sampling time : 1min), High pressure injection (300kPa, 1min)



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