DETERMINATION OF ORGANOCHLORINE PESTICEDE IN EDIBLE OIL (USING SWEEP CO-DISTILLATION CLEAN-UP METHOD)

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This method is used to determine the concentration of 15 organochlorine pesticides in edible oil using capillary column with electron detector (ECD) (*Figure 1*).

Figure 1. Unitrex for organochlorine analysis.

DEFINITION

The compounds as shown in *Table 1* are to be determined using this method.

PRINCIPLE

The method involves spreading a thin film of the sample over glass surfaces (glass beads) inside a fractionation tube, the pesticides are then partitioned into the gas stream and are carried up and out of the sidearm of the fractionation tube into a trap packed with sodium sulphate and partially deactivated Florisil. The pesticides are then eluted from the trap and determined by GC-ECD (*Figure 2*).

TABLE 1.

Compound	CAS registry No.
α-BHC	319-84-6
β-BHC	319-85-7
γ-BHC (lindane)	58-89-9
δ-BHC	319-86-8
α-Chlordane	5103-71-9
γ-Chlordane	5103-74-2
α-p,p′-DDD	72-54-8
p,p′-DDE	72-55-9
p,p′-DDT	50-29-3
Endrin	72-20-8
Endrin ketone	53494-70-5
Heptachlor	76-44-8
Heptharchlor epoxide	1024-57-3
Methoxychlor	72-43-5

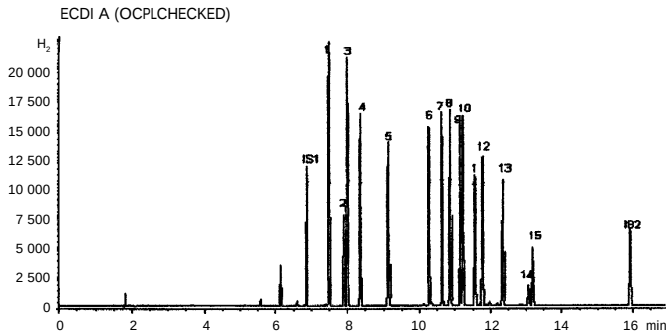

Figure 2. Gas chromatogram of 15 organochlorine pesticide reference standards: 1µl injection volume of 1 µg ml^{-1} concentration. Peaks: IS1 = tetrachloro-m-xylene; 1=α-BHC = β-BHC; 3 = lindane; 4 = δ BHC;5 = heptachlor; 6 = heptachlor epoxide; 7 = γ-chlordane; 9 = p,p′-DDE; 10 = dieldrin; 11= endrin; 12 = p,p′-DDD, 13 = p,p′-DDT; 14 = endrin ketone; 15 = methoxychlor; IS2 = decachlorobiphenyl.

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REFERENCES

HALIMAH, M; M D PAUZI, A; TAN, Y A and CHIAN, S S (2004). Optimization of the sweep co-distillation clean-up method for the determination of organochlorine pesticide residues in palm oil. *J. Oil Palm Research Vol. 16 No. 2*: 30-36.

LUKE, B G; RICHARDS, J C and DAWES, E F (1984). Recent advances in clean-up of fats by sweep co-distillation. Part 1: organochlorine residues. *J. Assoc. Official Anal. Chem., 67*: 30-36.

M D PAUZI, A ; HALIMAH, M; AINIE, K and CHIAN, S S (2003). Comparison of solid phase extraction and sweep co-distillation techniques for the determination of organochlorine pesticide residues in refined palm oil. *Sains Malaysiana, 32(2):* 131-142.

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