

Study on the Development of Simultaneous Analytical Method for the Organic Chlorides in the Residual Agricultural Chemicals using Gas Chromatography

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A method for the simultaneous analysis of 31 residual organic chlorides pesticides was studied using gas chromatography. Prepared analytical samples (mixtures of standard organic chlorides) were injected to gas chromatography (HP 5890 Series II) on Ultra-2 column with ECD. The packing material for column was changed as the following reagents : florisil and alumina N. The residual solution was loaded to column and was eluted with elution solvents : ether : benzene (2:8) solution, hexane : benzene (1:1) solution, dichloromethane, acetic acid, and methanol.

The analytical results showed that 6 kinds of organic chlorides were not detected when florisil(first condition) was used as the column packing material. The nondetected 6 kinds of organic chlorides in the first analytical condition were detected and the recoveries of thrin-pesticides were increased, in particular, captan and captafol, but the recoveries of benzene hexachlorides compounds were decreased when dichloromethane and methanol were added as elution solvents (packing material was florisil as in the first condition). The recoveries of dichlorofluanid, chloropenvinfos, felpet, and dicofol were increased and that of aldrin was increased, but those of captan and captafol were not good when alumina N was used as the packing material.

To detect simultaneously thrin-pesticides, captan, and captafol, florisil and alumina N were used as the packing materials and n-hexane was packed. The elution result showed that captan and captafol were not detected. This was because the column was activated insufficiently. The analytical method was the best (31 kinds of organic chlorides in the residual pesticides were detected sharply and showed high sensitivity) when the column (packing materials were florisil and alumina N, together) was fully activated and the impurities were removed using various elution solvents.