

The Present Status and Near Future View of Pesticide Residue Analysis

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Summary

Capillary column/gas chromatographs with mass spectrometer detectors (GC-MSD) have become widely used for the analysis of pesticides and environmental chemicals.

Because of their success, the GC-MSD in combination with other GC detectors, has been listed as the standard analytical tool in the Japanese guidelines for drinking water quality.

As directed by the Japanese Food Sanitation Law, the Ministry of Health and Welfare is required to establish standards for residues of approximately 200 pesticides on various crops by the end of the fiscal year 1994. In order to accomplish this task, new pesticide residue analysis methods utilizing the GC-MSD will be developed by the Ministry in order to simplify methods and increase accuracy of identification of any residual pesticides.

High performance liquid chromatography (HPLC) has been used for analysis work in the drug and food additive area utilizing the ultraviolet absorption detector (UVD). The UVD, however, has been shown to have low sensitivities and characteristics when working with pesticide residue analysis. The HPLC-MSD combination with acceptable new analytical methods, could be a valuable asset for this type of work.

This paper contains information on cleanup for sample preparation, operation for cool on, split and splitless types of capillary column/GC-MSD operation. Further information on the interface of HPLC-MSD, including direct liquid introduction, moving belt,

thermospray, ionspray and electrospray, were introduced. Comparison of pesticide residual analysis using HPLC-UVD and HPLC.MSD indicated the superiority of the HPLC-MSD system when samples of phenylurea herbicide on lettuce and carbamate insecticide in soils were evaluated.