DETERMINATION OF ORGANOPHOSPHORUS PESTICIDES AND THEIR METABOLITES IN MILK SAMPLES

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Nowadays, determination of trace levels of pesticide residues in foodstuff is of growing importance. Legislation upon drinking water in EU set the limits at sub ppb level for total pesticide residue [1]. However, there is a great degree of uncertainty about the limits in food those can be safely tolerated for the pesticides. Pesticides are used on agricultural commodities and particularly late season fungicides can be carried into the food samples. The maximum residue level (MRL) requires very sensitive methods for pesticide determination in food. Especially gas chromatography (GC) was used for simultaneous determination of pesticides [2,3]. Chromatographic techniques are widely employed since they are powerful separation techniques. Literature survey reveals that these methods usually differ in sample preparation step alone due to the complex matrix effect on the recovery.

The main object of this study is to develop reliable and accurate methods for sensitive determination of pesticide residues with their metabolites in milk samples. For this purpose Chlorpyrifos, Chlorpyrifos-oxon, Malathion, Maloxon, Parathion and Paraoxon types were determined by QuEChERS method and it was validated for milk samples. Analyses were performed by using GC-MS system. Calibration curves were linear in a range of 40 - 500 ng/mL with the detection limit of in the range 0.12-2.8 ng mL $^{-1}$. The RSD values were changed in the range of 6.3 – 11.2 %. The accuracy of the method was tested with spiked milk samples and 103 % recovery was found for 50 ng mL $^{-1}$ concentration.

KEYWORDS: Pesticide, gas chromatography, metabolite, milk, mass spectrometry

REFERENCES: