Determination of Procymidone by Liquid Chromatography Tandem Mass Spectrometry

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Modern conventional agricultural production depends heavily on the use of pesticides and fungicides and their residues can persist to the harvest stage, making possible the contamination of the final product. In opposite, organic farming systems do not allow pesticides from chemical synthesis, though contamination may occur. Both European Union and the Codex Alimentarius Commission of the Food and Agriculture Organization of the United Nations have established maximum pesticide residues limits (MRLs). Procymidone is one of the most widely fungicide used to control post harvest decay caused by various fungal pathogens. Methods used to analyse fungicides and their residues are similar to those used for other pesticides. Gas chromatography (GC) is the most classical method of pesticide analysis while presently GC-Mass Spectrometry (GC-MS) is often used to authenticate identification. Liquid chromatography (LC) is more widely recommended for thermally and unstable labile compounds, usually in conjunction with UV, fluorimetric or mass spectrometric detection. The determination of pesticide residues in olive oil is typically difficult because fat is extracted along with the analyte. Very recently some contamination cases due to the presence of procymidone in organic olive oil occurred. Therefore, a rapid LC-MS/MS method for the determination of procymidone residues in olive oils was developed. Procymidone was extracted from olive oil by acetonitrile and reverse phase C18 column. The spectra were acquired on a 4000 Q-TRAP mass spectrometer in MRM mode. Quantification was obtained by external standard method. The standard calibration curve obtained was generated from triplicate 10 μl injections at different concentration covering the range from 25 μg/kg to 500 μg/kg with a linear coefficient of 0,999. The recovery obtained for spiked sample with 30 μg/Kg of procymidone was 76%. For reproducibility test, three concentrations were analyzed and the average coefficient of variation (CV%) was less than 12%. The limit of detection (LOD) found was 10 μg/Kg, defined as 3 times the standard deviation of the signal from reagent blanks, after correction for sample weight and dilution. Therefore, tandem mass spectrometry may candidate as a powerful tool in order to analyse eventually contaminated olive oil samples.