

**DEVELOPING A METHOD TO DETERMINE
2,4-D AND MCPA IN TEA WITH
DERIVATIZATION BY GAS
CHROMATOGRAPHY –ELECTRON CAPTURE
DETECTOR (GC-ECD)**

A dissertation submitted to the
Faculty of Animal Science and Export Agriculture
Uva Wellassa University

In partial fulfillment of the requirements for the award of the
Degree of Bachelor of Export Agriculture

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Faculty of Animal Science and Export Agriculture
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2010

ABSTRACT

A gas chromatographic method with electron capture detector was developed for the residue determination of two phenoxy acid herbicide residues (4-Chloro-2-methylphenoxy acetic acid and 2,4-dichlorophenoxy acetic acid) in black tea. The black tea samples were extracted with methanol: water (8:2) mixture, and then followed by liquid-liquid partition with dichloromethane and water. Then the residues were derived with methanol: sulfuric acid (9:1) mixture and the resulting mixture was further cleaned up by hexane and washed with NaHCO_3 . The esters were analyzed by a gas chromatograph equipped with an electron capture detector (ECD) and they were quantified by the external standard method. The average recovery percentages of the spiked samples at 0.05, 0.1, 1.0 ppm were 0.09225, 0.05775 and 0.05325 consecutively. Since the recoveries of the spiked samples at 3 spike levels were all below 70%, it was revealed that the method is not capable to comply with different acceptability criteria of food regulatory organizations for 2,4-D and MCPA maximum residue in black tea for European Union and Japanese market. The proposed method can be applied with some modifications of methylating reagent, extraction method and clean-up method to determine pesticide residue in black tea.