

ANALYSIS OF INSECTICIDES VIA SPME/GCMS

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ABSTRACT

ANALYSIS OF INSECTICIDES VIA SPME/GCMS

A method of analyzing and comparing relative amount of pesticides was studied via instrument of SPME and GC-MSD. The adsorption of pesticides was made by Supelco PDMS 100 μm fiber. The samples used in this analysis were from three different brands having the same active content- *allethrin*. Method of adsorption was a solventless, convenient and simple in studying the relative amount of pesticides in samples. Variables of adsorption temperature and adsorption time were studied in order to optimize the SPME adsorption condition. The samples were tested at variable temperature of 70°C, 80°C and 90°C as well as variable adsorption times of 15 minutes and 30 minutes. It was determined that the optimum condition for SPME adsorption to be 80°C adsorption temperature with 30 minutes adsorption time. The peak area of pesticide recovered from the extraction via SPME at optimum condition was analyzed by GC-MSD and it was used as the determinant of recovery for other commercial insecticide sample. The desorption temperature for GC was 280°C with initial oven temperature of 60°C, hold for 2 minutes then increased to 200°C at 15°C per minute with holding time of 2 minutes. Total GC analysis was 13.33 minutes. By using the optimized SPME and GC-MSD condition, a profile of pesticide extracted from samples were obtained and compared.

CHAPTER 1

INTRODUCTION

1.1 Background

Dengue fever, JE (Japanese Encephalitis), malaria were only few of many present insect borne diseases. These diseases were spread to the victim via mosquito. Fear of public towards the mosquito borne diseases has been seen in arisen trend of indoor insecticide usage. Pesticide, to be more specific, mosquito repellent has become an important house hold item now-a-day. If long ago, the repellent maybe only in coil type but today the repellent has evolved to liquid and even in an aerosol type.

Pyrethrins were developed as pesticides from the extracts of dried chrysanthemum flower beads. The flower was dried and powdered before it undergoes solvent extraction process. Harvested flower can resulted in approximately 30% of active ingredient. This active ingredient is a powerful tool in paralyzing pests. *Pyrethrins* moved deeply into the insect nerves system, poisoning it to become immobilized. However natural *Pyrethrins* did not fully killed the insect as it will be detoxified by the insect's enzymes. Thus, some of pest will recover. It was also easily decomposed by