MAIN OBJECTIVE

To develop a method for the determination of hexaconazole in an oil matrix.

EXPECTED BENEFITS

This method can be used to provide key information on the level of hexaconazole in crude palm oil (CPO).

INTRODUCTION

Hexaconazole is a systemic fungicide widely used to control fungal pathogens in a variety of crops (Paredes and Munnoz, 2002).

In Malaysia, hexaconazole is used to inhibit the spread of Ganoderma infection from infected oil palm (Idris et al., 2004). Ganoderma can cause the disease basal stem rot (BSR) in oil palm and the spreading of the infection, if not prevented, will destroy the oil palm.

It is important to measure the level of hexaconazole in crude palm oil because of its toxic effects on human. The research began with the development of a method to determine the level of hexaconazole in samples of oil.

METHOD

The following flow chart shows the method for hexaconazole determination:

Sample (crude palm oil)

Add methanol

Shake, vortex, sonicate

Take upper layer

Dry with nitrogen

Add dichloromethane

Inject

Clean up

Solid phase extraction (SPE) 500 mg silica sorbent

Elute with dichloromethane:methanol (DCM:MeOH) (Figure 1)

Dry extract with nitrogen and reconstitute in acetone

Inject

Detection

Gas chromatography micro electron capture detector (GC-μECD) (Figure 2)

RESULTS

Calibration Curve

A calibration curve was prepared using 0.2, 0.4, 0.8 and 1.0 mg litre$^{-1}$ standard solutions of hexaconazole in acetone.
Recovery Study
Recovery of standard hexaconazole at concentrations of 0.2, 0.5 and 1.0 mg litre⁻¹ was 58%, 77% and 62%, respectively.
Limit of quantification (LOQ) : 0.2 mg kg⁻¹.
Limit of determination (LOD) : 0.06 mg kg⁻¹.

CONCLUSION
This procedure is proposed as one of the methods for the determination of hexaconazole in crude palm oil.

REFERENCES