

**UNIVERSITI TEKNOLOGI MARA**

**DEVELOPMENT OF ASSAY METHOD FOR  
CLOTRIMAZOLE AS A SUSTAINED RELEASE  
SOLID DOSAGE FORM**

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## ABSTRACT

Sustained-release drug delivery systems allow the antifungal agent to reside at the sites of infection for a prolonged period; hence the systems are ideal to be applied topically in order to achieve desirable therapeutic effect. A simple, sensitive, rapid and reproducible assay method has been developed for determination of the antifungal drug, clotrimazole, when it is incorporated with sodium carboxymethylcellulose as the polymer for sustained-release solid dosage form. Chromatographic method was applied by using high performance liquid chromatography (HPLC) equipped with reversed phase octadecylsilica (ODS) C18 column.

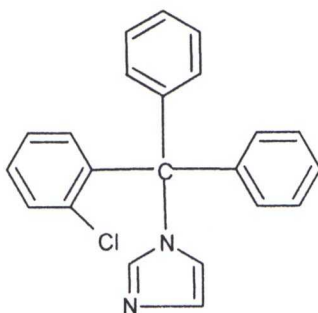
The compound was separated with the mobile phase comprised of acetonitrile and 25 mM disodium hydrogen phosphate anhydrous (65:35, v/v) adjusted to pH 8 with *o*-phosphoric acid. Analysis was run at a flow rate of 1.0 ml/min and the column effluent was monitored at a wavelength of 220 nm. The calibration graph was linear over the concentration range of 10-100 µg/ml with the retention time of 3.74 min. The correlation coefficient of the calibration curves were always  $\geq 0.999$ , while the within-day and between-day coefficient of variation were all less than 1%. The developed method has been successfully applied for the determination of clotrimazole from its polymer.

# CHAPTER 1

## INTRODUCTION

A number of different antifungal agents are available, with variety of pharmacological classification. Imidazole derivatives, under azole class of antifungal, have become an attractive target of synthetic and pharmacological studies because of their effectiveness in the treatment of fungal diseases in immunocompromised patients observed with AIDS or after transplantation. (Cirilli, et. al., 2002).

Clotrimazole, 1-[(2-chlorophenyl)diphenylmethyl]-1H-imidazole (Figure 1.1) , is a chlorinated synthetic imidazole derivative, having broad spectrum of antifungal and antimicrobial properties that has been shown to be effective as a topical treatment of several infections (BNF 50, 2005; Dollery, 1999; Martindale, 1999).



**Figure 1.1. Molecular structure of clotrimazole**

**Molecular weight : 344.8**