

UNIVERSITI TEKNOLOGI MARA

CHEMICAL DERIVATIZATION OF PREDNISONE

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ABSTRACT

Prednisone gives many benefits to human in medical field because of its anti-inflammatory effect. These favorable benefits lead to the development of many synthetic compounds with much greater anti-inflammatory activity than the natural hormones. Therefore, this research was done to produce other derivatives of prednisone, by synthesizing it using chemicals like acetic anhydride, benzoyl chloride, 4-bromobenzoyl chloride and 4-(dimethylamino)benzoyl chloride, by using the most optimum time and temperature for its derivatization. Thin Layer Chromatography was used to monitor the reaction and purity of product. This study showed that under optimum temperature and time, pure derivative for prednisone can be obtained.

CHAPTER ONE

INTRODUCTION

1.1 General Introduction

Hormones are chemical signal molecules that are produced in one cell and that regulate the other cell's function (McKee & McKee, 2003). There are two types of hormones, which are water-soluble or lipid-soluble. These hormones typically initiate their actions within target cells by binding to a receptor. Water-soluble hormones (e.g., polypeptides, proteins, and epinephrine) bind to receptor molecules that are located on the outer surface of the target cell's plasma membrane. This reversible binding process will trigger a mechanism that initiates a phosphorylation cascade either directly (e.g., insulin) or indirectly *via* second messenger molecule (e.g., glucagon). However, lipid-soluble hormones, such as steroids and thyroids, enter target cells and bind to specific receptor molecules. Each hormone-receptor complex then binds to specific regions of the target cell's DNA (McKee & McKee, 2003).

The signal transduction mechanisms of steroid hormones result in changes in gene expression. The action of these hormones will cause the switching on or off of a