

**SYNTHESES OF 2,3-DIOXOPYRROLIDINES WITH BENZALDEHYDE
USING DIFFERENT AMINES**

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ABSTRACT

This thesis describes a simple and efficient methodology for the syntheses of 2,3-dioxopyrrolidine templates. 2,3-dioxopyrrolidine is a five-membered heterocyclic aromatic compound containing one nitrogen atom which can be found in certain natural products and is also incorporated in several pharmacologically active compounds. The procedure described in the thesis uses a one pot reaction whereby a three component reactants which are sodium diethyl oxalate, primary amines and aromatic aldehydes undergo a reaction all at once. Different primary amines and aldehydes are used which contribute to differences in percent yield. Formation of yellowish solids are depending on the reagents utilized. Two fundamental reactions involved in the synthesis are nucleophilic addition and Dieckmann cyclization to form the targeted compound. Each synthesized compounds are characterized using NMR and FTIR spectroscopic techniques to study the structure of the molecule. 2,3-dioxopyrrolidine is also attempted to undergo a reduction reaction using zinc powder in buffer solution of acetic acid and sulfuric acid. Unfortunately, the procedure has so far given only moderate yield but the results show that the principle works.

CHAPTER 1

INTRODUCTION

1.1 Natural Product

There are tremendously rich sources of highly miscellaneous chemical structures which comes from the nature so-called the natural product. A natural product is defined as a substance found in nature produced by living organisms from big to tiny microorganism. They might exist in many different forms like alkaloids, terpenes, steroids and many more. They contain useful compounds that displaying interesting functions and play an important role in the development of drug discovery and drug design. Furthermore, natural products make up the most diverse and active compound library. However there are many problems arise since these active compounds are hardly made by nature. Therefore, they has always been the starting point of the discipline of organic synthesis and being one of the interesting part in organic chemistry whereby its study has enhanced organic chemistry in different ways.