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SYNTHESIS AND CHARACTERIZE THE ANTIOXIDANT ACTIVITIES OF CHALCONE DERIVATIVES

'INSYIRAH BINTI ISKANDAR ZULKARNAIN

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ABSTRACT

SYNTHESIS AND ANTIOXIDANTS ACTIVITIES OF CHALCONES

Chalcones are a group of natural compounds that have attracted much attention because of their varied pharmacological characteristics. The synthesis, and antioxidant properties of chalcones and their derivatives are the main subjects of this study. Four chalcone derivatives were synthesized by Claisen-Schmidt condensation of suitable aromatic ketones or substituted aromatic ketones with benzaldehydes or substituted benzaldehydes. They were four derivatives of chalcones, namely 2-hydroxy-4'-bromochalcone, 2-hydroxy-4'-chlorochalcone, 4'-bromochalcone and 4'-chlorochalcone. Purification of the synthesized chemicals was achieved using recrystallization and column chromatography. The determination of the structure of synthesized compounds were done by its physical properties like melting point and TLC followed by spectroscopic analysis such as NMR and FTIR. The antioxidant capacity of synthesized chalcones was assessed. The results showed significant antioxidant activity, indicating that chalcones may be useful as naturally occurring antioxidants. Overall, this work emphasizes the synthesis, and antioxidant properties of chalcones, highlighting their potential for use in medicine and other therapeutic fields. Additional investigation into chalcone derivatives might result in the creation of innovative medications with improved effectiveness and fewer adverse effects.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Chalcones or 1,3-diphenyl-2-propen-1-ones are auxiliary metabolites of eatable or restorative plants that have a place in the chalcones family are composed of two aryl moieties associated with an unsaturated carbonyl gather (α, β). The structure of these compounds incorporates a −C═O–CH═CH– ketoethylenic moiety. They have a delocalized π-electron containing a course of action in their fragrant rings. The essential component of chalcones is polyphenolic chemicals, which run in color from yellow to orange and play a major part in the coloration of certain plants' corollas. Happening in natural products, flavors, teas, and soy-based nourishments, chalcones have drawn a parcel of intrigue due to their interesting and maybe invaluable qualities. Besides, these compounds can be found as creepy crawly hormones, plant allelochemicals, and pheromones in characteristic goods (Mutha et al., 2021). Chalcones are utilized to form heterocyclic compounds and are too subjected to an assortment of chemical processes. By responding aromatic aldehydes with aryl ketones within the nearness of the proper amount of condensing specialists, an assortment of chalcone subordinates can be produced. An assortment of chalcone subsidiaries can be created by condensing aryl ketones with fragrant aldehydes and including the right condensing