



SYNTHESIS, CHARACTERIZATION AND ANTIBACTERIAL ACTIVITIES OF HYDRAZONE SCHIFF BASE COMPOUNDS AND ITS DERIVATIVES

(Sintesis, Pencirian dan Aktiviti Antibakteria Sebatian Bes Schiff Hidrazon dan Terbitannya)

Ruwaida Asyikin Abu Talip^{1*}, Meng Guan Tay¹, Hashimatul Fatma Hashim²

¹Department of Chemistry, Faculty of Resource Science and Technology

²Department of Molecular Biology, Faculty of Resource Science and Technology
Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

*Corresponding author: ruwaidaasyikinabotalip@gmail.com

Received: 21 August 2016; Accepted: 27 July 2017

Abstract

Biological activities (e.g. antibacterial) of hydrazone compound have received much attention from the synthetic chemists since last two decades. Herein, we would like to report the synthesis pathways as well as the spectroscopic characterization of three etherified hydrazone Schiff base compound, which were initiated from 2-hydroxyacetophenone. Hydrazone Schiff base compound was obtained through condensation reaction between 2-hydroxyacetophenone with benzhydrazide. Meanwhile the etherified derivatives of hydrazone Schiff base were prepared *via* Williamson ether synthesis under reflux condition. All the synthesized compounds were characterized using Fourier transformation infrared, UV-Vis and ¹H nuclear magnetic resonance spectroscopy. In addition, the antibacterial activities of these compounds were also conducted using disc diffusion method against *Bacillus cereus* and *Escherichia coli*. The results are discussed in this present paper.

Keywords: hydrazone Schiff base, etherified derivatives, antibacterial

Abstrak

Aktiviti biologi (contoh: antibakteria) sebatian hidrazon telah menerima banyak perhatian daripada ahli kimia sintetik sejak dua dekad yang lalu. Di sini, kami ingin melaporkan kaedah sintesis serta pencirian spektroskopi tiga hidrazon yang telah di eterifikasi, dimulakan dari 2-hidroksiasetofenon. Bes-Schiff hidrazon telah diperolehi melalui tindak balas pemeluwapan antara 2-hidroksiasetofenon dengan benzihidrazida. Sementara itu, terbitan yang telah di eterifikasi daripada bes Schiff hidrazon telah disediakan melalui kaedah sintesis eter Williamson di bawah keadaan refluks. Semua sebatian yang disintesis dicirikan menggunakan inframerah transformasi Fourier, spektroskopi UV-Vis dan ¹H magnetik nukleus resonan. Di samping itu, aktiviti antibakteria sebatian ini juga dijalankan dengan menggunakan kaedah cakera penyebaran terhadap *Bacillus cereus* dan *Escherichia coli*. Keputusan dibincangkan dalam kajian ini.

Kata kunci: bes Schiff hidrazon, terbitan yang telah dieterifikasi, antibakteria

Introduction

Hydrazones generally are prepared by reacting a stoichiometric amount of hydrazide (R-NH-NH₂) and a carbonyl (C=O) compound in suitable solvent under reflux condition [1]. Hydrazone Schiff base compounds and complexes have attracted considerable amount of attention since last two decades due to their pharmaceutical activities such as antiproliferative effect, antimicrobial, antibacterial, antifungal, anti-inflammatory [2], anticonvulsant, antitubercular, antiviral, antioxidative effects and inhibition of tumor growth [3]. These biological activities enable the hydrazone