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Synthesis, antibacterial, lipoxygenase and urease inhibitory activities of 2-aminophenol derivatives

Muhammad Aslam[1,2,*], Itrat Anis[2], Nighat Afza[1], Muhammad Tahir Hussain[3], Lubna Iqbal[1], Ajaz Hussain[4], Samina Iqbal[1], Tanveer Hussain Bokhari[4], Muhammad Khalid[5]

[1]Pakistan Council of Scientific and Industrial Research, Karachi-75280, Pakistan.
[2]Department of Chemistry, University of Karachi, Karachi-75270, Pakistan.
[3]Department of Applied Sciences, National Textile University, Faisalabad-37610, Pakistan.
[4]Department of Chemistry, Government College University, Faisalabad-38040, Pakistan.
[5]Institute of Chemistry, University of São Paulo, São Paulo-05513-970, S.P. Brazil.

*Corresponding author: maslamchemist@hotmail.com, Tel: +923339955488

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Abstract

In oder to discover potentially active antibacterial compounds, three Schiff bases: *2-[(4-methoxybenzylidene)-amino]phenol* **(5)**, *2-[(3,4-dimethoxybenzylidene)-amino]phenol* **(6)**, *2-[(3,4,5-trimethoxybenzylidene)-amino]phenol* **(7)**, were synthesized by the condensation of 2-aminophenol **(1)** with aldehydes **(2-4)** in methanol along with H_2SO_4. The synthesized Schiff bases **(5-7)** were characterized by ^{1}H-NMR, IR, EIMS and elemental analysis. The compound with greater $-OCH_3$ groups was found to be more biologically active than others. The antibacterial activity was excellent against *S. aureus* and *B. subtilis*, while LOX was excellent for **7** with IC_{50} 19.3 μM.

Keywords: Schiff base; antibacterial; urease inhibition; lipoxygenase inhibition

Introduction

Schiff bases are bioactive compounds based on azomethine (-HC=N-) linkage, which are obtained by the reaction of amines with aldehydes or ketones in acidic or basic medium. Schiff bases are medicinally important compounds due to their broad range of biological and industrial applications. A number of significant curative compounds have been obtained from the Schiff base reactions (Vasoya et al., 2005). These are also used as intermediates in polymer chemistry and organic synthesis as well (Vasoya et al., 2005). Literature reveals that these compounds have shown a broad range of activities such as antimalarial (Li et al., 2003), anticancer (Villar et al., 2004; Shi et al., 2012), antitumor (Hu et al., 2008), antibacterial (Venugopal et al., 2008; Pandey et al., 2000), antifungal (Pandey et al., 2000), antitubercular (Hearn et al., 2009), anti-HIV (Pandey et al., 1999), antimicrobial (Wadher et al., 2009) and antiviral (Karthikeyan et al., 2006). Some of them have been used as powerful corrosion inhi-

