Synthesis and Antimicrobial Activity of Some New Diindolylmethane

Dr. Meenu Mangal[1,*] and Nitesh Saini[2]
[1,2,*]Poddar International College Mansarovar,Jaipur-302020, Rajasthan, India
E mail: drmeenumangal@gmail.com

Condensation of aldehyde or ketone with approximately substituted indoles in glacial acetic acid gave diindolylmathene. The synthesized compounds have been characterized by elemental analysis and spectral data (IR, PMR and FEB MASS). All the synthesized compounds have been evaluated for anti-bacterial and anti-fungal activities.

Keywords: Ketones, Substituted Indoles, Antibacterial and Antifungal activities.

1. INTRODUCTION

Indole and their derivatives are important intermediates in organic synthesis in view of their pharmacological activities. Bis (indol-3-yl) methane derivatives affect the central nervous system and so are used as tranquilizer [1]. Bisindolylmethane can increase the body's natural metabolisms of hormones and promote good estrogen (2-hydroxyl estrogen). Its effect in the prevention of cancer due to its ability to modulate certain cancer causing estrogen metabolites Bisindolylmethane can induce apoptosis in human cancer cells and may also normalize abnormal cell growth associated with cervical dysphasia. Diindolylmethane(DIM) is a natural compound formed during the autolytic breakdown of glucco brassicin present in food plants of the Brassica genus including broccoli, cabbage, Brussels sprouts, cauliflower and kale. The autolysis breakdown of glucobrassician requires the catalytic reaction of the enzyme myrosinase which is endogenous to these plants and released upon rapture of the cell wall. Medical epidemiologists believe that the lower risk of cancer attributed to people who consume a lot of brassica vegetables is in part due to DIM numerous anticancer peoples. Indole is the most beneficial heterocyclic nucleolus which has gained prominence in medicinal chemistry due to its diverse biological activities such as anticonvulsant, anti-inflammatory antipsychotic activities [2,4-11]. Joshi et al. have published a comprehensive review compiling all biologically active indoles having medicinal value [3]. Introduction of phenyl group at 2-position of the indole ring enhances biological activity like monoamine oxidase inhibition [12,13].

2. EXPERIMENTAL

C and H analyses of compounds has been done using coleman C and H analyzer. Nitrogen analyses has been done using coleman N-analyses-29. Melting point were determined in open glass capillaries and are uncorrected. IR (4000-400 cm^{-1}) were recorded on Perkin Elmer model 557 and Nicholet magna model 750 spectrophotometer in KBr pallets at central Drug Research Institute (CDRI), Lucknow and Department of

chemistry, University of Rajasthan, Jaipur. ^{1}H NMR spectra were recorded on spectrometer (300 mHz) at UOR, Jaipur using $CDCl_3$ /DMSO as solvent. TMS was taken as standard. The chemical shift are in δ ppm. In all reaction and prepartions of starting material, reagents were purified by either distillation or recrystallization. The purity of compounds was checked by TLC using silica gel-G as adsorbent in various solvent system. Visualization was accomplished by U.V. light or iodine adsorption.

2.1 General Methods for the Synthesis of 2,2`-diphenyl-3,3`-diindolyl methane (DIM)

A mixture of substituted indoles [14] (10 mmol) and appropriate aldehyde or ketone (10 mmol) was refluxed in glacial acetic acid for 4 hrs. After cooling overnight a crystalline compound was obtained which was filtered and recrystallized from benzene. The compound gave a single spot on TLC in different solvent system. The yields, M.P., physical and analytical data of the title compounds are recorded in Table 1.