Preparation and Antioxidant Activity of Heterocyclic Indole Derivatives

Authors : Tunca Gul Altuntas, Aziz Baydar, Cemre Acar, Sezen Yılmaz, Tulay Coban

Abstract : Free radicals, which are generated in many bioorganic redox processes, play a role in the pathogenesis of several diseases including cancer, arthritis, hemorrhagic shock, inflammatory, cardiovascular, neurodegenerative diseases and agerelated degenerative brain diseases. Exposures of normal cell to free radical damages several structures, oxidizes nucleic acids, proteins, lipids, or DNA. Compounds interfere with the action of reactive oxygen species might be useful in prevention and treatment of these pathologies. A series of indole compounds containing piperazine ring were synthesized. Coupling of indole-2-carboxylic acid with monosubstituted piperazines was accomplished with 1,1'-carbonyldiimidazole (CDI) in a good yield. The structures of prepared compounds were verified in good agreement with their 1H NMR (nuclear magnetic resonance), MS (mass spectrophotometry), and IR (infrared spectrophotometry) characteristics. In this work, all synthetized indole derivatives were screened in vitro for their antioxidative potential against vitamin E (α-tocopherol) using different antioxidant assays such as superoxide anion formation, lipid peroxidation levels in rat liver, and 2,2-diphenyl-1-picrylhydrazyl (DPPH) stable radical scavenging activity. The synthesized compounds showed various levels of inhibition compared to vitamin E. This may give promising results for the development of new antioxidant agents.

Keywords : antioxidant, indoles, piperazines, reactive oxygen species

Conference Title : ICDDMCCP 2018 : International Conference on Drug Design, Medicinal Chemistry and Clinical Pharmacy **Conference Location :** London, United Kingdom

Conference Dates : July 26-27, 2018

1