



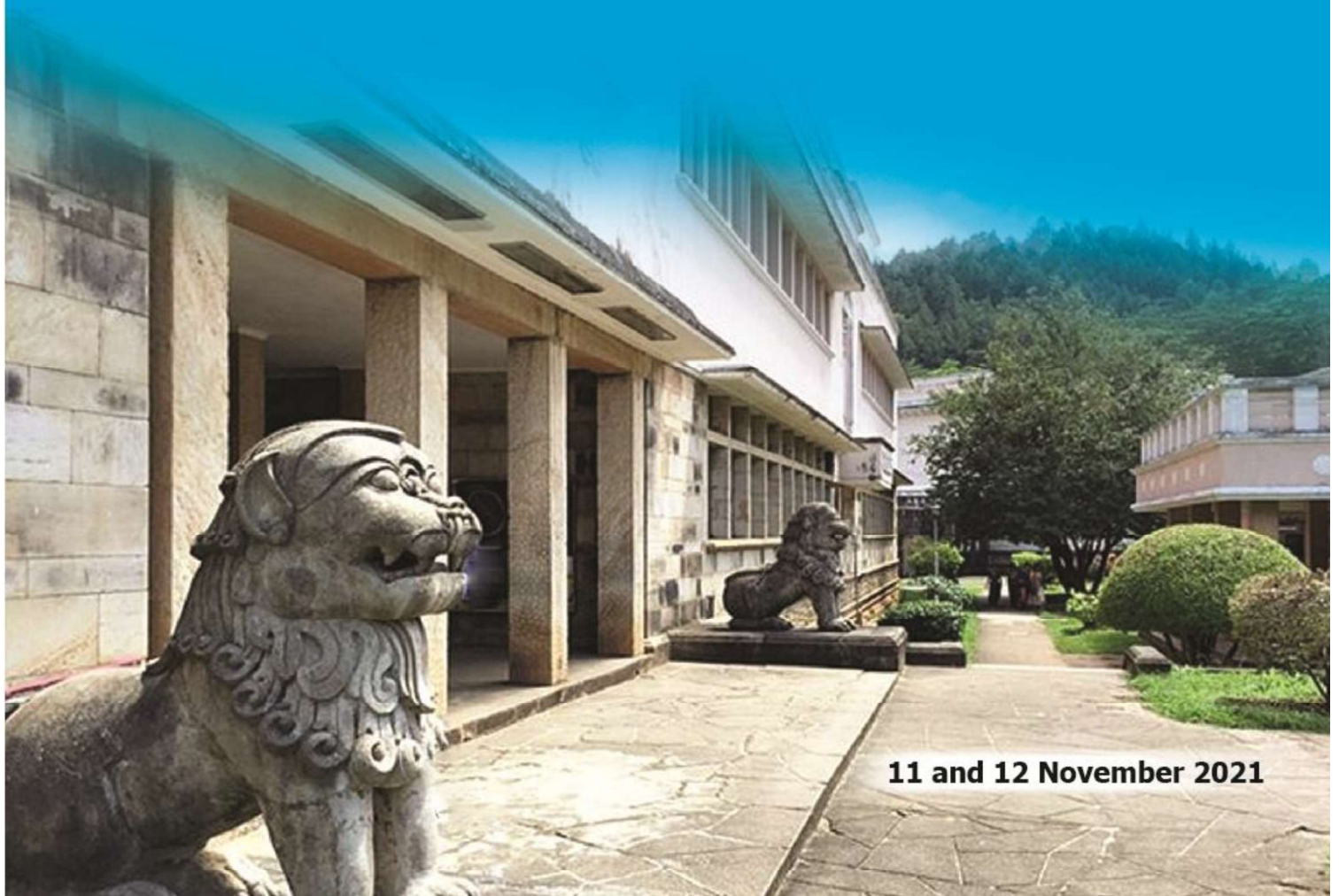
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Microwave-Assisted Solvent-Free Synthesis of 3-(4-Dimethylaminobenzylidene) Indolin-2-One and Investigation of Its Anti-Oxidant Activity

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The recent emergence of 3-benzylidene-indoline-2-ones as an important group of oxindole derivatives is gaining much interest in the pharmaceutical field. These oxindole derivatives have been shown a broad spectrum of biological activities including anti-cancer, anti-viral, anti-bacterial, anti-oxidant and anti-inflammatory. The development of an effective method for the synthesis of these compounds in an environmentally benign manner will be a tremendous benefit to the society. Microwave-assisted organic reactions in solvent-free conditions are considered an effective, eco-friendly synthetic tool in organic chemistry as it acts fast and produces high yield and low by-products. The present study is focused on the development of a novel green method for the synthesis of 3-(4-dimethylaminobenzylidene) indoline-2-one and to investigate its anti-oxidant activity. Oxindole and 4-(dimethylamino)benzaldehyde was thoroughly mixed with 3-aminopropyl)triethoxysilane (APTES) modified silica and irradiated inside a modified microwave oven for 12 minutes. The product was obtained with 76% yield and characterized by Nuclear Magnetic Resonance (NMR) and Fourier-Transform Infrared (FTIR) spectroscopic techniques. The compound was tested for in-vitro anti-oxidant activity using 2,2-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid (ABTS) assay. Both ¹H NMR and ¹³C NMR spectra confirmed the formation of 3-(4-dimethylaminobenzylidene) indoline-2-one. The FTIR spectrum of the resulted compound show characteristics peaks related to the functional groups present in the targeted compound. The half-maximum inhibitory concentration (IC-50) of resulted product and the standard drug (ascorbic acid) was calculated using linear regression analysis. IC-50 values of the synthesized compound and the positive control, ascorbic acid were 0.028 ± 0.008 mg/mL and 0.029 ± 0.004 mg/mL, respectively. These findings revealed that 3-(4-dimethylaminobenzylidene) indoline-2-one shows a strong anti-oxidant activity. Microwave-assisted, eco-friendly, solvent-free, green synthesized biologically active oxindole derivative (3-(4-dimethylaminobenzylidene) indoline-2-one) will be applicable for the future development of novel therapeutic agents.

Keywords: Microwave-assisted, Solvent-free, Oxindole, 3-benzylidene-indolin-2-ones, Anti-oxidant

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