ABSTRACT

A series of imidazole derivatives connected with pyridine moiety through phenyl groups were synthesized by using Suzuki coupling followed by multicomponent cyclization reaction. Results obtained from spectroscopic ((1)H NMR, (13)C NMR, Mass) and single crystal X-ray diffraction analysis of synthesized compound was in very good agreement with its chemical structure. UV-Vis and fluorescence studies in various solvents with different polarity demonstrated that these compounds were sensitive to the polarity of the microenvironment. In addition, multi linear regression analysis based on Kamlet-Taft and Catalán new four parameter solvent scale results in solvatochromism and was mainly influenced by solvent polarisability and dipolarity of the environment. The electrochemical stability of the compounds was also studied by cyclic voltammetry. An excellent fluorescent nature with high quantum efficiency of the compounds was successfully utilized to probe the bacteria by using fluorescence microscopy. In addition, the antibacterial and antifungal activity of these compounds were also studied in vitro by the disk diffusion assay against one Gram-positive, three Gram-negative bacteria and Candida albicans. MPBI showed relatively good inhibitory action against Gram-negative bacteria and TPBI against Gram-positive bacteria and 3PBI against C. albicans.