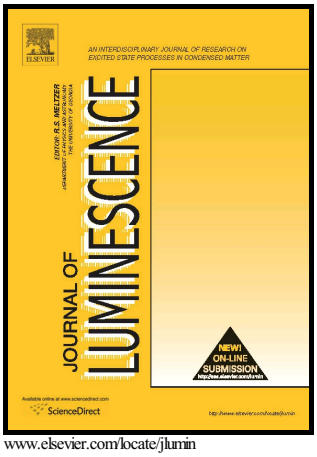

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A Coumarin Based Chemosensor for Selective Determination of Cu (II) Ions Based on Fluorescence Quenching

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Abstract

A potential fluorescent probe, N'-acetyl-2-[(4-methyl-2-oxo-2H-chromen-7-yl)oxy] aceto-hydrazide **(HMC1)** was designed on the basis of photoinduced electron transfer (PET) and synthesized using cheap starting materials. **HMC1** was found to be highly efficient as a Cu^{2+} ion quencher with a detection limit of 0.64 μM (~ 40 ppb). The binding mode of **HMC1** towards Cu^{2+} was evaluated by ^{1}H-NMR, LC-MS and FT-IR techniques. In addition, cellular imaging studies further exhibited that **HMC1** could be used an intracellular turn-off fluorescent chemosensor for Cu^{2+} in living cells.

Keywords: Fluorescent probes, coumarin, acetohydrazide, copper ions, live-cell imaging

1. Introduction

Metal ions are crucial for several life processes owing to their role in various chemical and biological processes such as homeostasis, neurophysiology, gene transcription and enzymatic reactions [1]. Disturbed metal homeostasis in the body can lead to pathological states. These