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# A Coumarin Based Highly Sensitive Fluorescent Chemosensor for Selective Detection of Zinc Ion

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## Abstract

A very effective and highly sensitive fluorescent chemosensor, based on 4-hydroxycoumarin skeleton substituted by benzothiazole moiety was synthesized and investigated for the detection of zinc ion. This chemosensor displays highly selective and sensitive fluorescence enhancement to  $\text{Zn}^{2+}$  over other metal ions examined in solution and in biological systems. The detection limit for the fluorescent chemosensor **1** toward  $\text{Zn}^{2+}$  was  $3.58 \times 10^{-8} \text{M}$ . A simple and efficient approach was improved for the synthesis of chemosensor **1** starting from 4-hydroxycoumarin.

## Keywords

Fluorescent

Coumarin

Chemosensor

Zinc ion

Benzothiazole

## 1. Introduction

The development of novel efficient fluorescent chemosensors for the detection of cations with high selectivity and sensitivity are currently of significant importance for many scientific fields, such as chemistry, biology, and environmental science [1]. Among various metal ions,  $\text{Zn}^{2+}$  is one of the most important metal cations. It is the second most abundant metal ion in the human body and play critical roles in biological processes such as regulation of enzymes, immune

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