

Selective Sensing of Nicotinamide Mononucleotide over Citric Acid by the Ratiometric Behaviour of Two Fluorescent Probes

Hong-Guen Lee, Na-Kyeong Hong, and Young-Tae Chang

Department of Chemistry, Pohang University of Science and Technology (POSTECH), Pohang 37673, Republic of Korea.

E-mail: ytchang@postech.ac.kr

Nicotinamide mononucleotide (NMN) has gained significant attention in recent years due to its potential anti-aging properties. However, with the growing market demand for NMN supplements, the risk of purchasing counterfeit drugs has also increased. Because of the cost efficiency, harmlessness for daily consumption, and a similar sour taste to NMN, citric acid (CA) has the potential to be abused as a counterfeit drug of NMN. Here, we report a selective sensing system for NMN over CA, named **NC1**, consisting of two fluorescent probes: NBD-B2 and Styryl-51F. The ratiometric fluorescence of **NC1** at 550 nm and 650 nm exhibits a linear increase upon the addition of NMN within the range of 10 mg mL^{-1} , and it is also capable of detecting NMN at concentrations as low as 0.2 mg mL^{-1} , whereas CA does not induce any increase in ratiometric fluorescence. Furthermore, we confirm that **NC1** can discriminate NMN not only from CA but also from other NAD boosters, such as NR and NAD^+ . Therefore, this fluorophore pair system, **NC1** provides a sensitive and wide range of NMN sensing ability with modest selectivity over other potential counterfeit drugs.

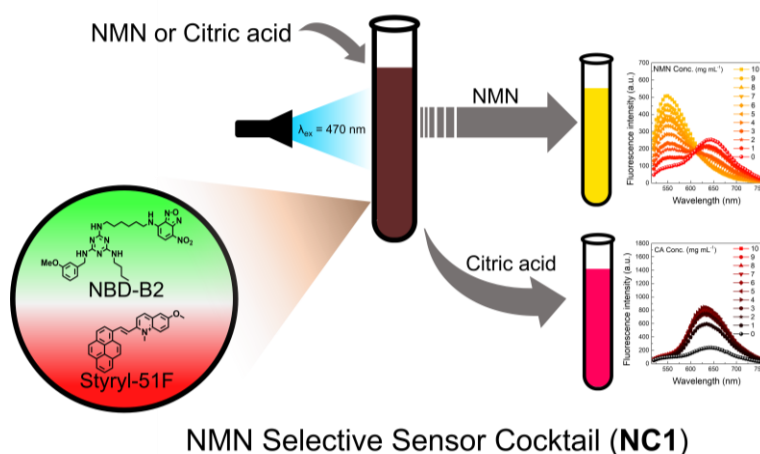


Figure 1. NMN selective two fluorescent probe system, **NC1**