Short Communication

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2020.31.005044

Design and Application of a Novel D-Π-A Fluorescent Probe

Di Lu[1], Kuilin Lv[2,3], YanQiu Hu[1], Jingtao wang[1], Jiang Wu[1] and Yuguang Lv[1]*

[1]*College of Pharmacy, Jiamusi University, Jiamusi, China*

[2]*China Building Materials Inspection and Certification Group Co, Ltd. Room, Chaoyang District, Beijing*

[3]*State Key Laboratory of Green Building Materials, China State Building Materials, Research Institute Co, Ltd. Room, Chaoyang District, Beijing*

***Corresponding author:** Yuguang Lv, College of Pharmacy, Jiamusi University, Jiamusi, China

ARTICLE INFO

Received: September 28, 2020

Published: October 09, 2020

Citation: Di Lu, Kuilin Lv, YanQiu Hu, Jingtao wang, Jiang Wu, Yuguang Lv. Design and Application of a Novel D-Π-A Fluorescent Probe. Biomed J Sci & Tech Res 31(1)-2020. BJSTR. MS.ID.005044.

ABSTRACT

Ibuprofen is widely used in the fields of pharmacy, biology and medicine. Ibuprofen is related to people's health, can resist the invasion of diseases, in order to greatly improve the quality of life of people. Therefore, it is very important to construct a new method with high sensitivity and selectivity for the in vitro trace analysis of ibuprofen, so as to monitor the content of ibuprofen.

Keywords: D - π - A Organic Complex; Ibuprofen; Bioanalysis; Drug Analysis; Biomedicine

Introduction

As a antipyretic, analgesic and anti-inflammatory drug, ibuprofen has been widely used. The related researchers have paid extensive attention to the analytical technology of ibuprofen and started to be studied at a very early time. There are also many reports on the pharmacological analysis of ibuprofen in the literature [1]. At present, the analytical methods for the quantitative determination of ibuprofen mainly include stoichiometry, ultraviolet spectrophotometry, chromatography, indirect atomic absorption spectrometry, differential scanning calorimetry, acid-base titration, capillary electrophoresis, fluorescence analysis, etc. each of these methods has its own characteristics [2].

Among them, chemometric analysis has high sensitivity, but the amount of reagent added and the amount of chemical calculation need to be paid special attention to; UV spectrophotometry is easy to operate, high-speed, avoids complex and expensive instruments and equipment, has less sample consumption, can be recycled and reused after detection, some low concentration salt and most buffer solutions have no interference to the determination, but the sensitivity is relatively easy to be affected [3]. The chromatographic analysis method has the following advantages: good sensitivity, high efficiency, fast detection speed, less sample for detection, automatic analysis, high selectivity, but high analysis cost; indirect atomic absorption spectrometry has high selectivity, fast detection, automatic detection, high sensitivity, wide application range, anti-interference and high precision, However, it cannot be used for simultaneous analysis of multiple elements, and the range of linear equation is narrow; differential scanning calorimetry has a wide temperature range, less sample size and good resolution, but it can only be used for qualitative and semi quantitative detection of samples; acid base titration analysis, as a widely used analytical method, requires close monitoring of workers, making the detection particularly inconvenient; capillary electrophoresis analysis efficiency However, the sensitivity, reproducibility and preparation ability need to be improved [4,5].

However, the operation of fluorescence analysis method is simple, fast, efficient, and has a wide range of applications [6]. At present, the fluorescence probe method in fluorescence analysis is favored by researchers. There are still more room for improvement

in the speed, reproducibility, robustness and sensitivity of various analytical methods. The new analytical methods include the expansion of the spectrum coverage, the shortening of analysis time and the reduction of sample consumption. Therefore, it is of great significance to establish an optimized method for trace analysis of ibuprofen. In this study, ibuprofen was taken as the research object, and two new fluorescent probes were constructed for the quantitative determination of ibuprofen in vitro. One was D - π - a fluorescent probe, the other was a fluorescent probe with rare earth ions. In order to achieve simple and accurate quantitative detection of ibuprofen, it provides a convenient and reliable quantitative detection method for ibuprofen [7].

The two methods not only have great contribution to the determination of NSAIDs, but also have more potential application value. As ibuprofen has antibacterial effect, rare earth also has strong antibacterial effect, so the Ternary Rare earth complexes doped with ibuprofen are expected to be studied in antibacterial aspects, which will contribute to the medical field, and can also become photoelectric materials with excellent luminescent properties. In addition, D - π - a complexes have high efficiency charge transfer ability, which will be applied in biochemistry, chemistry and materials It has great application value [8].

Acknowledgements

This work was financially supported by the National Science Foundation of China (No.21346006), Department of scientific research project in Heilongjiang province (No. B2017015), Excellent discipline team project of Jiamusi University ((No. JDXKTD-2019007).

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Yuguang Lv. Biomed J Sci & Tech Res