

Chemiluminescencedetection of aminoacids using an Edman-typeragent, 4-(1'-cyanoisindolyl)phenylisothiocyanate

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Abstract

The 4-(1'-cyanoisindolyl)phenylisothiocyanate (CIPIC) could be used as a chemiluminescence (CL) Edman-typeragent. Firstly, CL reaction conditions such as pH, buffer types, H₂O₂ concentration and organic solvents were optimized in detail. Secondly, the CL sensitivity of the derivative of Ala was compared with fluorescence and absorbance detections. Thirdly, the structures of the CL intermediate and emitter were elucidated by liquid chromatography–mass spectrometry (LC–MS) and NMR of CIPIC and its analogues after their CL reactions. Consequently, the thiohydantoin derivatives for 16 kinds of aminoacids were separated and sensitively detected by CL with lower detection limits of 0.3–0.8 pmol at a signal-to-noise ratio of 3, after the coupling reaction of aminoacids with CIPIC and their cyclisation reaction.