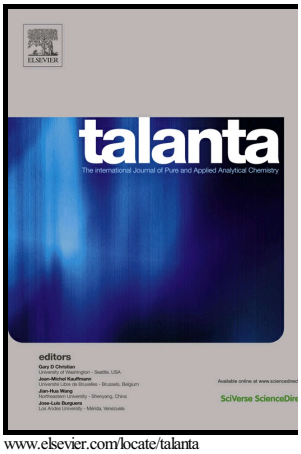

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Dalong Yu, Ping Wang, Yanjun Zhao, Aiping Fan

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Iodophenol blue-enhanced luminol chemiluminescence and its application to hydrogen peroxide and glucose detection

Dalong Yu, Ping Wang, Yanjun Zhao, Aiping Fan*

Tianjin Key Laboratory for Modern Drug Delivery & High-Efficiency, School of Pharmaceutical Science and Technology, Tianjin University, Tianjin 300072, People's Republic of China

*Corresponding author. Tel.: +86-22-27401191; Fax: +86-22-27409967.

E-mail address: aipingfan1980@163.com

Abstract

In this study, we found that iodophenol blue can enhance the week chemiluminescence (CL) of luminol-H_2O_2 system. With the aid of CL spectral, electron spin resonance (ESR) spectral measurements and studies on the effects of various free radical scavengers on the iodophenol blue-enhanced luminol-H_2O_2 system, we speculated that iodophenol blue may react with H_2O_2 and oxygen to produce oxidizing radical species such as $OH^{\cdot}$ and $O_2^{\cdot-}$ resulting the formation of $^1O_2$. The generated $^1O_2$ may react with luminol anion generating an unstable endoperoxide and subsequent 3-aminophthalate* (3-APA*). When the excited-state 3-APA returned to the ground-state, an enhanced CL was observed. Based on the H_2O_2 concentration dependence of the catalytic activity of iodophenol blue, a cheap, simple, sensitive CL assay