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论文摘要

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基于对羟基桂皮醇的新型酶联荧光免疫传感系统测定布氏杆菌抗体

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摘 要：以一种纯天然产物对羟基桂皮醇(4-hydroxycinnamic alcohol，HCA)为辣根过氧化物酶(HRP)底物，建立对羟基桂皮醇-辣根过氧化物酶-过氧化氢新体系。对羟基桂皮醇本身只有极弱的荧光，在HRP催化下可被H_2O_2氧化成二聚体产物，该二聚体在315 nm的激发光下能发射波长为467 nm的强荧光，并且反应体系荧光强度增加值与HRP量在一定浓度范围内呈线性相关。根据此关系和竞争型免疫定量原理，建立兔布氏杆菌抗体测定的荧光酶联免疫传感体系，并对免疫测定条件如pH值、HRP-BrAb用量、BSA和流速等进行优化。运用制备传感体系测定兔布氏杆菌抗体的质量浓度线性范围为2.7~90 μg/L，检测限为2.7 μg/L，相对标准偏差为4.6%；对羟基桂皮醇在空气中较稳定，对人体无毒害，在临床上可代替传统HRP底物。

关键字：对羟基桂皮醇；HRP 荧光底物；布氏杆菌抗体；免疫传感体系

An enzyme-linked fluoroimmunosensing system for Brucella melitensis antibody detection based on a novel substrate 4-hydroxycinnamic alcohol for HRP

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Abstract:A natural product, 4-hydroxycinnamic alcohol (HCA) was used as a substrate for HRP in enzyme-linked fluoroimmunoassay. In enzymatic reaction procedure, HRP-Brucella melitensis antibody conjugate (HRP-BrAb) catalyze the polymerization of HCA by H_2O_2, and the HCA is partly converted to polymers, a fluorescent species. The fluorescence increase of the HRP-enzymatic product at emission of 467 nm (excitation at 315 nm) is proportional to the concentration of HRP-BrAb binding to the Brucella melitensis antigens, which were entrapped in cellulose-paraffin matrix. The linear range of determination for BrAb is 2.7-90 μg/L with the relative standard deviation of 4.6%. The detection limit is 2.7 μg/L. HCA is stable in air and non-toxic to human health. The proposed method can be used for analysis of commercial formulation and plasma sample with satisfactory results.

Key words:4-hydroxycinnamic alcohol; HRP fluorogenic substrate; Brucella melitensis antibody; immunosensing system

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