Electrochemical Behavior and Direct Quantitative Determination of Tanshinone II_A in Micro-emulsion

Jiao-jiao Wu^{1,2}, Wen-ting Wang^{1,2}, Miao Wang^{1,2}, Hong Liu^{1,2,*} & Hong-chun Pan^{1,2,*}

¹ College of Pharmaceutical Sciences, Southwest University, Chongqing 400715, China.

² Chongqing Engineering Research Center for Pharmaceutical Process and Quality Control, Chongqing 400715, China.

*E-mail: lhphch@126.com, panhongchun216@126.com

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Tanshinone II_A (TAN), an insoluble drug prepared to form micro-emulsion, was electrochemically investigated by cyclic voltammetry (CV) and differential pulse voltammetry (DPV) at glassy carbon electrode. Its electrochemical behavior was proved to be quasi-reversible in acetate buffer (pH4.0), besides, on the basis of CV, the electrochemical redox mechanism of TAN has proved two protons and two electrons involved in the electrode surface reaction. DPV method was developed for its quantitative determination in real sample, and the linear relationship between the peak current and the TAN concentration was obtained in the concentration range of 0.2 to 1.2 µg/mL with a detection limit of 50.25 ng/mL. The reproducibility and repeatability of the method were determined and validated feasibly. The accepted RSD (1.82%) and recovery studies (96.01-101.23%) were obtained, and the result was agreed well with that by HPLC. The present study provides guidance for TAN electrochemical behavior investigation and direct determination of micro-emulsion.

Keywords: Tanshinone II_A, Micro-emulsion, Quantitative determination, Voltammetry, Electrochemical behavior.

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