1-P-131

Poster Sessions

Rapid measurement of plasma concentration of a molecular targeted agent, imatinib, with diamond sensor.

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Imatinib is a classical molecular targeted anticancer agent that specifically suppresses a hyperactivated tyrosine kinase and used for treatment of the patients with chronic myeloid leukemia. The application has been recently expanded to gastrointestinal stromal tumor. This drug is initially administered to all the patient at the same dose without normalization by parameters of the individuals such as the body surface area and weight and the variation in metabolism. Therefore, it is difficult to expect the effects of the therapy. Optimization of the administration protocol for individual patients requires immediate determination of plasma level of the compounds at clinical site. To address this issue, we show a simple procedure with an electrochemical approach. The sensor consists of boron-doped diamond electrode, a state-of-the-art material that elicits more stable reaction than classical materials. We examined guinea-pig plasma containing imatinib at different concentrations. With the procedure, each measurement was completed in 35 sec. This method was sensitive to the drug of 0.3 to 10 μ M, the range included in a therapeutic window. The methodology described here may contribute to advances in pharmacotherapies for cancer.