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学位記授与の要件	学位規則第 4 条第 1 項該当		
学位論文題目	Development of Early-stage Malaria Treatment and Diagnosis by Hybrid Drugs & Electrical Impedance Spectroscopy (ハイブリッド薬剤と電気インピーダンス分光法による早期マラリア治療薬と診断法の開発)		
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論 文 内 容 の 要 旨

Approximately 249 million cases and 608, 000 deaths of malaria were reported in malaria-endemic countries in 2022. The sub-Saharan African region accounted for 90% of the cases. Alternative drugs and accurate early-stage malaria diagnosis techniques are essential to guarantee appropriate and timely initiation of treatment interventions. Conventional light microscopy and molecular techniques such as real-time polymerase chain reaction (PCR) can quantify malaria-infected red blood cells (iRBCs) but are time-consuming and require high technical expertise to ensure accurate diagnosis. Previously, the electrical impedance spectroscopy (EIS) technique has attracted much interest in biomedical research for diagnostic purposes. This study had three originalities. First, the antimalarial efficacy of a novel compound, artesunate-3-chloro-4-4(chlorophenoxy)aniline (ATSA) was determined. Second, artemether-resistant (AMR) parasites were selected by gradually increasing the drug dosage. Finally, red blood cells (RBCs) infected with *P. falciparum* were quantified by EIS and the relaxation time distribution (DRT) analysis.