

# **Development of a semiquantitative point-of-care test for CRP detection for both diagnosis and monitoring of malaria severity**

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## **Abstract:**

The management of acute febrile illnesses, especially in resource-constrained settings in low- and middle-income countries (LMICs), poses a challenge due to limited access to diagnostic tools. This often leads to delayed identification of the causative agent, hindering prompt and appropriate case management. This study explores the potential of C-reactive protein (CRP), a human inflammatory marker, as a rapid and accessible biomarker for malaria detection and severity monitoring.

Previous research suggests that CRP levels can effectively discriminate malaria from healthy controls and other febrile illnesses. Notably, a CRP cut-off value of 10.8 mg/L demonstrated a high negative predictive value (97.0%), indicating the absence of malaria parasites in patients with normal CRP levels. This highlights the potential of CRP as a rule-out tool for malaria in febrile patients. Furthermore, the study emphasizes the feasibility of using CRP in combination with routine laboratory parameters as a biomarker for early malaria detection and severity monitoring. The use of CRP alongside existing diagnostic tools could potentially improve diagnostic accuracy and guide treatment decisions, particularly in LMICs where resources are limited.

The development of a semiquantitative point-of-care (POC) test for CRP detection further enhances the practicality of this approach. Such a test would require minimal sample volume (finger-prick blood) and eliminate the need for specialized laboratory equipment, making it readily accessible even in resource-constrained settings. While the quantitative measurement of CRP provides valuable information, a semiquantitative POC test could offer a rapid and cost-effective way to rule out malaria and guide clinical decision-making, ultimately improving patient outcomes.

In conclusion, this study highlights the potential of CRP as a valuable biomarker for malaria detection and severity monitoring, especially in resource-constrained settings. Further research on the development and implementation of a semiquantitative POC test for CRP could significantly improve the management of febrile illnesses in LMICs.