

Electronic Supplementary Data

A Sensitive Paper-Based Colorimetric Assay for Creatinine Detection in Biological Fluids

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1. Calibration Curve of Shelf-Life Study LP-μPAD

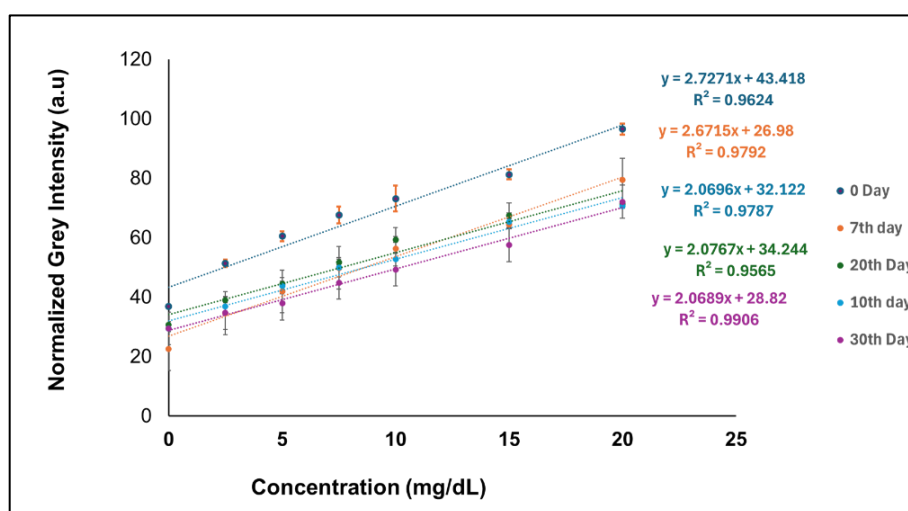


Figure S1. Calibration plots for the shelf life study of the device at different storage intervals (0, 7, 10, 20, and 30 days) ($n = 4$).

2. Comparison of Calibration Performance using Different Smartphone Models

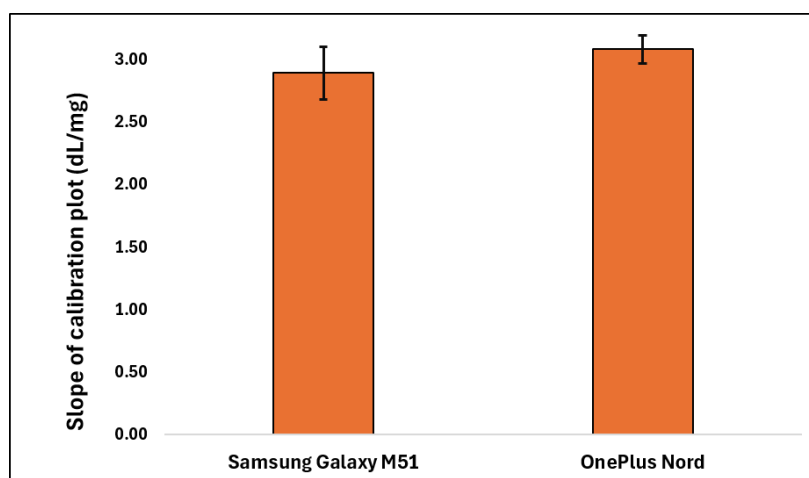


Figure S2. Comparison of calibration slopes obtained using two smartphone models under identical imaging conditions inside the custom-designed 3D-printed light box. ($n = 3$).

To evaluate the influence of the smartphone model on the analytical response, the calibration experiment was repeated using a OnePlus Nord smartphone under the same imaging conditions as those used for the Samsung Galaxy M51. All images were acquired inside the custom-designed 3D-printed light box with the flash disabled and analyzed using the same ImageJ software. The calibration curves obtained with both smartphones showed similar trends over the concentration range of 0-20 mg/dL. The mean NGI values differed by less than 6% across the investigated concentrations, indicating that the controlled illumination of the imaging box reduced variations between the two smartphone cameras. These results indicate that the proposed imaging setup provides reproducible colour measurements under the experimental conditions employed in this study.

3. Accuracy Assessment

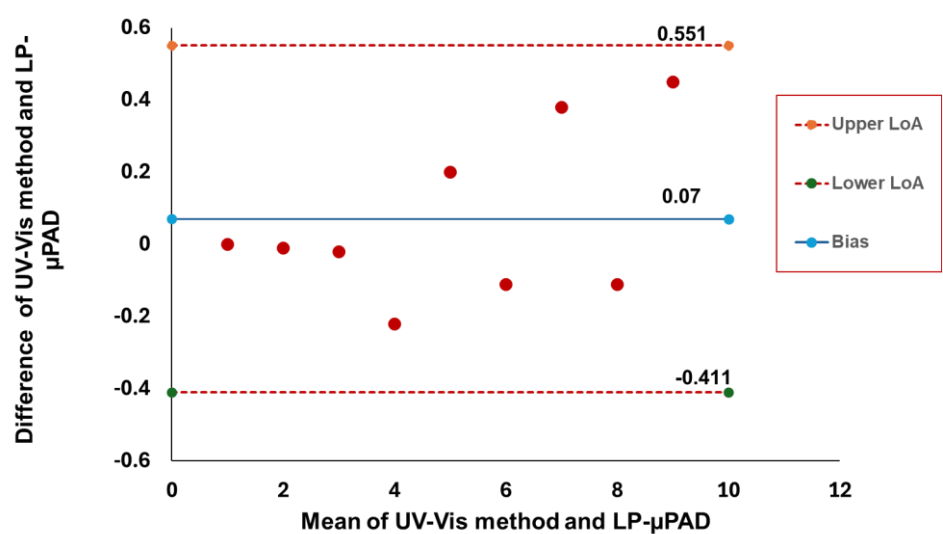


Figure S3. Bland–Altman bias plot showing the agreement between the LP-μPAD and UV-Vis methods for creatinine determination.