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BIOMARKER IDENTIFICATION FROM URINE OF DENGUE PATIENTS THROUGH GCMS FOR INITIAL DEVELOPMENT OF NON-INVASIVE DIAGNOSTIC KIT

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Abstract

Dengue infection detection methods, namely dengue serology test and Real-Time PCR, are only available in clinical laboratories or healthcare facilities. This is time-consuming and inconvenient for patients. Thus, a non-invasive on-site urinary diagnostic kit for dengue infection that requires no trained personnel for blood extraction would be advantageous and warranted, albeit in developed or underdeveloped nations with limited resources. To develop the on-site diagnostic kit, an identification of biomarkers related to dengue infection is needed. This preliminary study aims to identify potential metabolite biomarkers from the urine of dengue patients using GCMS analysis. Urine samples of patients with serologically confirmed dengue infection were analyzed and compared with healthy volunteers. The study shows that the GCMS approach can identify differences in the urine of dengue patients from healthy volunteers. Heptacosane, Hexadecane, 2, 4-bis(1, 1-dimethylethyl) phenol, 2-bromooctane, tetradecane, hexyl octyl ester sulfurous acid, 2-benzoyl methyl ester benzoic acid, 2, 9-dimethyl decane, and pentadecane were identified from the urine of dengue patients. The identified secretion of alkane may be a suitable candidate for colorimetric assay for the development of a user-friendly, home-screening rapid test kit for the detection of dengue infection. © (2024), (International Islamic University Malaysia-IIUM). All rights reserved.

Author Keywords

Biomarkers; dengue; detection method; GCMS; metabolites

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