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*in conjunction with*

**9<sup>TH</sup> MEDICAL RESEARCH SYMPOSIUM**

# ABSTRACT BOOK

**INTEGRATING MISSION ORIENTED RESEARCH IN MEDICAL SCIENCES**



**WED & THU**

11 & 12 SEPT 2024



**TIME**

8:00AM - 5:00PM



**VENUE**

AC HOTEL BY MARRIOTT  
KUANTAN, PAHANG, MALAYSIA

P018

## Urine Metabolomics in Dengue Infection: Elucidating Hexadecane as a Potential Biomarker

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**Introduction:** Dengue infection remains a major global health concern, necessitating rapid, non-invasive, and universally accessible diagnostic methods. Existing diagnostic modalities fail to simultaneously address the critical aspects of sensitivity, specificity, efficiency, and cost-effectiveness. The NS1 antigen detection test exhibits low sensitivity, while serology tests carry a high risk of false negativity due to low IgM titres in the early phase of infection. Urine-based metabolic profiling has emerged as a promising approach for the identification of specific disease biomarkers. This study aims to identify urinary metabolites associated with dengue infection, leveraging these biomarkers to develop a urine-based dengue test kit. Alkane group metabolites may rise as they act as energy substrate to assist viral replication. **Materials and method:** We analysed urine samples from 30 dengue-infected patients and 30 control subjects using Gas Chromatography-Mass Spectrometry (GC-MS). The analysis focused on identifying distinct metabolites based on retention time (RT) and similarity index (SI), with the quantification of their concentrations using peak area. **Results:** Our findings revealed a significant presence of hexadecane in the urine samples of dengue-infected subjects ( $p < 0.01$ ) compared to control subjects. This metabolite was characterized by a RT of  $20.95 \pm 2.23$  minutes, a SI of  $85.50 \pm 5.00\%$ , and a peak area of  $1360566.25 \pm 1066618.37$  a.u. **Conclusion:** The marked detection of hexadecane specifically in dengue patients, highlights its potential as a key biomarker for dengue detection. This discovery establishes the foundation for the development of rapid, non-invasive urine-based dengue diagnostic tests.

**Keywords:** Dengue infection; metabolomics; gas chromatography-mass spectrometry (GC-MS); biomarker