

EDITORIAL**THE TRANSFORMATIVE FUTURE OF METABOLOMICS FROM DIAGNOSTICS TO THERAPEUTICS***Prof. Dr. Abubakar Munir¹***¹Dean, Faculty of Pharmacy, Superior University Lahore, Pakistan, and Editor-in-Chief of International Journal of Pharmacy and Integrated Health Sciences.****Corresponding author's email:** abubakarmunir@superior.edu.pk**DOI:** <https://doi.org/10.56536/ijpihs.v5i2.213>

Metabolomics, or the study of metabolites produced during chemical reactions in living organisms, is a fast-growing topic within the "omics" sciences. It has proven valuable in various disciplines, including plant biology and medicine. However, there are still issues to be addressed. Metabolomics has already found biomarkers for multiple disorders, and the emphasis is now turning from diagnosis to treatment, resulting in "therapeutic metabolomics." This innovative approach seeks to comprehend and address the underlying pathophysiology of diseases. The next significant metabolomics hurdle will be identifying safe medicines that selectively target illness causes and demonstrate clinical utility. For example, current prostate cancer research has identified sarcosine pathway components as both disease progression biomarkers and possible therapeutic targets (1). Alongside concurrent brain imaging modalities, new data compilation approaches are needed for the metabolomics-based diagnosis of brain cancers. Furthermore, to expedite the measurement process, hyperpolarization techniques for the C12 isotope of metabolic substrates are required (2).

Nowadays, the trend is shifting towards clinical studies. Within the next few years, it will become evident and apparent whether metabolomics can replace other studies that include genomics and proteomics in oncology. Even though metabolomics is increasingly used to determine the etiology of diseases in which metabolic changes play a role, several biomarkers have been identified for several diseases. However, metabolite profiling for

many diseases in adults has still not been focused on and studied (3).

In the future, environmental metabolomics will be more concerned with understanding how organisms react to abiotic influences and interact with other organisms. This approach will expand our understanding of ecological interactions, allowing studies to go beyond individual individuals to entire populations. While closely related to ecophysiology and ecology, this research will eventually facilitate genetic adaptation studies, providing insights into how animals evolve and thrive in changing environments (2,3).

Conflict of the interest

The author declared no conflict of the interest.

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