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Personalizing drug treatment using pharmacometabonomic approach

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Personalized medicine is a medical model designed to customize drug therapies to individual patients using their distinct characteristics including demographics, medical histories and most importantly their molecular information (genetic, protein and metabolic profile). This concept is thought to be a gateway to truly individualized medical treatments. Personalized medicine beliefs that therapy should be based on the principal philosophy of 'every patient has a unique biology and pathophysiology that should be reflected in the choice of pharmacotherapy', thus resulting in an improved treatment outcome. Recent advances in genetic testing (genomics) have unveiled the potential relations between genetics and treatment response known as pharmacogenetics/pharmacogenomics. However, this method did not take into consideration of functional and environmental aspects which also play major roles in determining individual differences to clinical outcome. These aspects could be investigated and determined by a novel approach called pharmacometabonomic. Pharmacometabonomics, a branch of metabolomics, focuses on the detection of specific biomarkers in the metabolic profile that are associated with the pharmacodynamic/response and/or toxicity of a drug. Molecular information obtained from these analyses may lead to a more targeted therapy including dosing adjustment and therefore may reduce/prevent drug failure, cost and adverse drug reactions. In future, clinical pharmacist will have a wider role in personalized medicine, for example dose adjustment not just based on therapeutic drug monitoring but also based on molecular information. The aim of this presentation is to comprehensively evaluate recent publications to discuss the ability of pharmacometabonomic approach in personalizing drug treatment.

Biography

Baharudin Ibrahim obtained his Bachelor of Pharmacy in 2005 and Master of Pharmacy (Clinical Pharmacy) in 2007 from Universiti Sains Malaysia (USM). His Ph.D. work was on Metabolomics and Respiratory Medicine from University of Manchester in 2011. He has presented many of his works in international conferences such as American Thoracic Society, European Respiratory Society and Metabolomic conferences and published his researches in reputable journals. He is currently working as a Senior Lecturer in Clinical Pharmacy specializing in respiratory medicine in USM. His researches focus on metabolomics and pharmaco-metabonomics to identify biomarkers of diseases and metabolites to predict adverse drug reactions.

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