

Use of Stable Isotope Tracers in Metabolic Research: Importance of Kinetic Information in Understanding Metabolic Dysregulation

The use of isotope tracer methodology in metabolic research has greatly improved our current understanding of in vivo human (or animal) metabolism in normal or pathophysiological circumstances. Measurement of metabolite concentrations (metabolomics or proteomics) in tissues including blood provides useful but “snapshot” information on one’s health status. However, stable isotope tracers can provide kinetic (“dynamic”) information such as the rate of appearance, disappearance, production, and transport of metabolites. I will present the importance of the stable isotope tracer technology in the understanding in metabolic alterations. First, I will introduce basic principles of stable isotope tracer methodology. Second, I will present results of several clinical studies utilizing stable isotope tracers to understand metabolic changes.