

## **Effect of virgin avocado oil on diet-induced hypercholesterolemia in rats via $^1\text{H}$ NMR - based metabolomics approach**

### **ABSTRACT**

Hypercholesterolemia is a major risk factor for the initiation and development of nonalcoholic fatty liver disease and atherosclerosis. The present study evaluated the hypocholesterolemic effect of virgin avocado oil (VAO) using urinary metabolomic method. Male Sprague–Dawley rats were fed high-cholesterol diet for four weeks to induce hypercholesterolemia. After confirming the establishment of hypercholesterolemia model, the VAO (450 and 900  $\text{mg}\cdot\text{kg}^{-1}\cdot\text{day}^{-1}$ ) and simvastatin (10  $\text{mg}\cdot\text{kg}^{-1}\cdot\text{day}^{-1}$ ) were given orally while maintaining the high-cholesterol diet for another four weeks. Assessment of urinary metabolomics using NMR revealed that VAO treatment could partially recover the metabolism dysfunction induced by hypercholesterolemia mainly via lipid, energy, amino acid, and gut microbiota metabolism.

**Keyword:** Hypercholesterolemia; Metabolomics; Virgin avocado oil