

## **Physicochemical Properties and Heat Stability of Whey Protein Isolate-Lactose Conjugates Formed by Dry-Heating**

### **ABSTRACT**

Conjugation via MR consider as the safest and potential method in food industry. However, it is important to control the extent of conjugation via MR since the browning effect could lead to the health issues. There is great interest to understand the chemistry of MR, to improve the physicochemical properties, and to discover the potential of Maillard products with various functionalities. Whey protein isolate (WPI) has become an important source of functional ingredients in various health-promoting foods. However, WPI have problem with thermal instability that present during food processing. Therefore, this study aims to investigate the effect of dry-heating at different incubation time, then monitor the physicochemical properties and heat stability of WPI-Lactose conjugates. Conjugation of WPI with lactose was achieved by dry-heating with the ratio of lactose to WPI 1:0.4 (wt/wt). Incubation time varying from 0 to 10 days at 40°C and water activity  $A_w = 0.79$ . ophthaldialdehyde (OPA) assay was used to monitor the extent of conjugation. An incubation time of 3 days was selected as the standard conjugation time based on conjugation rates and the degree of Maillard browning. The result revealed that WPI Lactose conjugates at 3 days incubation has slightly improved heat stability of protein. Thus, a new approach of WPI-Lactose conjugates has potential to produce better heat resistance milk protein products in the future.