

Anti-obesity Activity and Mechanisms of Cyanidin-3-glucoside (C3G) on Obese db/db Mice

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Host: A/Prof Huang Dejian

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Abstract

Obesity develops when energy intake exceeds energy expenditure. Promoting brown adipose tissue (BAT) formation and function increases energy expenditure and may protect against obesity. Cyanidin-3-glucoside (C3G) is an anthocyanin which occurs naturally in many fruits and vegetables. We found that C3G increased energy expenditure, limited weight gain, maintained glucose homeostasis, improved cold tolerance, and enhanced BAT activity in obese db/db mice. We also found that C3G significantly upregulated the expression of uncoupling protein-1 (UCP1) and other thermogenic genes in BAT by increasing the number of mitochondria and enhancing mitochondrial function. C3G treatment also markedly enhanced the expression of fatty acid oxidation and mitochondria generation-related genes. Furthermore, C3G was found to increase the expression of UCP1 and mitochondria-specific oxphos proteins in BAT sections of db/db mice. In short, we determined that C3G plays a role in regulating organismal energy balance, which may have potential therapeutic implications for the treatment of obesity.

About the speaker



Dr. Zhan Jicheng is the professor of Food Science and Nutritional Engineering in China Agricultural University, where he got his PhD degree. His research expertise and interest is Viticulture and Enology. Now his research is focused on metabolic pathways involved in stress resistance of wine yeast and indigenous wine yeasts' exploitation. Since 2014, he began to do some research about the function of bioactive constituents in wine. He has published more than 50 articles in the forms of international peer-reviewed journals.