

Heat-killed and live *Lactobacillus reuteri* GMNL-263 exhibit similar effects on improving metabolic functions in high-fat diet-induced obesity rat

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Our objective was to investigate and compare the effects of heat-killed (HK) and live Lr263 on insulin resistance and its related complications in high-fat diet (HFD)-induced rats. Male Sprague-Dawley rats were fed with a HFD with either HK or live Lr263 for 12 weeks. The increase in weight gain, serum glucose, insulin, and lipid profile in serum and liver observed in HFD group were significantly reduced after HK or live Lr263 administration. Feeding of HK or live Lr263 reversed the decreased number of probiotic bacteria and increased number of pathogenic bacteria induced by high-fat treatment. The decreased intestinal barrier in HFD group was markedly reversed by HK or live Lr263 treatments. The elevations of pro-inflammatory associated genes expressions in both adipose and hepatic tissues by high-fat administration were markedly decreased by HK or live Lr263 treatments. The increased macrophage infiltration noticed in adipose tissue after high-fat treatment was effectively suppressed by HK or live Lr263 consumption. The insulin resistance associated gene expressions in both adipose and hepatic tissues which were downregulated in HFD group were markedly enhanced after HK or live Lr263 feeding. HK or live Lr263 consumption significantly decreased hepatic lipogenic gene expressions stimulated by high-fat treatment. Administration of HK or live Lr263 significantly reduced hepatic oil red O staining and ameliorated hepatic steatosis observed in high-fat treated rats. Our data suggested that similar to live Lr263, HK Lr263 exerted significant effectiveness on attenuating obesity-induced metabolic abnormalities by reducing insulin resistance and hepatic steatosis formation.

Biography

Wu Ching-Shuang has achieved his PhD degree in 2004 from Kaohsiung Medical University. He has been promoted as Professor in 2013. He is now the Chairperson of Department of Medical Laboratory Science and Biotechnology in Kaohsiung Medical University.

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