

Anti-Inflammatory Effects of Probiotic *Lactobacillus paracasei* on Ventricles of BALB/C Mice Treated with Ovalbumin

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Abstract

Lactic acid bacteria (LAB) are microorganisms that benefit animals with allergic diseases and intestinal disorders such as inflammatory bowel disease. We propose that LAB can prevent cardiomyocytes inflammation and apoptosis in BALB/c mice using an ovalbumin (OVA)-induced allergy. Thirty-nine male BALB/c mice were divided into five groups: normal control, allergy control and three allergy groups each treated with Kefir I (Kefir I), Kefir II (Kefir II) or GM080 products (GM080). The myocardial architecture and apoptotic molecules in the excised left ventricle from these mice were investigated and post-treatment effects were evaluated. The inflammatory pathway, including toll-like receptor 4 (TLR4), phospholipase-C γ -dependent tyrosine kinase (p-JNK), JNK1/2 and tumor necrosis factor- α (TNF- α) and the mitochondria-dependent apoptosis phospholipase-p38 (p-p38), Bcl-2 associated agonist of cell death (Bad), Bcl-2 associated X (Bax) and activated caspase 3, were found to be significantly increased in the hearts of allergy mice. The expression of phospholipase-nuclear factor- κ B (p-NF κ B), TNF- α , p-p38 and Bad protein products were reduced or retarded in the Kefir I- or II-treated allergy group. The GM080-treated allergy group exhibited significantly lower p-JNK, JNK1/2, phospholipase-I κ B (p-I κ B), Bax and Bad protein products than the Kefir I and Kefir II allergy groups. These results indicate that LAB can reduce inflammation and prevent apoptosis of cardiomyocytes in the heart of OVA-induced allergy mice.

Key Words: allergy, inflammation, apoptosis, lactic acid bacteria, ovalbumin

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