

Nutrient supplementation modulates angiotensin II-mediated atherosclerosis in ApoE KO mice

V. Ivanov, J. Cha, S. Ivanova, T. Kalinovsky, M. Rath, A. Niedzwiecki
Molecular Medicine Reports 3:417-425, 2010

In this study, we used a unique mice model that is deficient in ApoE gene (ApoE KO), which makes them prone to high cholesterol levels. In addition, these mice were exposed to Angiotensin II, a protein responsible for blood vessel constriction leading to high blood pressure. Both, the high cholesterol, and the high blood pressure, are important risk factors for atherosclerosis in humans as well.

We studied the effect of a specific nutrient mixture containing vitamin C, lysine, proline, EGCG, and quercetin, among other nutrients on the key parameters of atherosclerosis.

We observed that the nutrient mixture effectively reduced the atherosclerotic fatty plaque deposit in the blood vessels by 60%. The size and severity of the atherosclerotic lesions was 31% lower than the control group of mice. The supplemented group had 66% lower plasma LDL ('bad') cholesterol and 32% lower total cholesterol, which is commonly measured as an indicator of cardiovascular risk.

Additionally, the nutrient mixture also strengthened the artery wall by deposition of collagen fibers that were 208% stronger than the control.

The animals receiving micronutrients had 13% fewer abdominal aortic aneurysms and the frequency of tearing of the aorta was reduced by 41% (due to stronger arteries) than those on control diets.