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Blood Pressure Lowering Effect of Policosanol via Enhancement of HDL Quality and Functions

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Metabolic syndrome is closely associated with higher risk of hypertension, cardiovascular disease, diabetes and stroke. It has been reported that policosanol improves lipid parameters and HDL functionality in human participants. The aim of the present study was to investigate the long-term effects of policosanol supplementation on blood pressure (BP) and the lipid profile in healthy Korean participants with pre-hypertension (systolic 120-139 mmHg, diastolic 85-89 mmHg). This randomized, double-blinded, and placebo-controlled trial included 84 healthy participants who were randomly assigned to three groups receiving 10 mg of policosanol, 20 mg of policosanol, or placebo for 24 weeks. The BP, lipid profile, and anthropometric factors were measured pre- and post-intervention and then compared. Based on an average of three measurements of brachial BP, the policosanol 20 mg group showed the most significant reduction in average systolic BP (SBP) from 140 ± 12 mmHg at week 0 to 126 ± 13 mmHg at week 24 ($p < 0.0001$). The policosanol 10 mg group showed a 4% reduction in SBP from 135 mmHg at week 0 to 128 mmHg at week 24 ($p = 0.016$), whereas the placebo group showed no change in BP between weeks 0 and 24. The policosanol 20 mg group also showed significant reductions in aortic SBP and DBP up to 9% ($p = 0.00057$) and 8% ($p = 0.004$), respectively compared

with week 0. Additionally, blood renin and aldosterone levels were significantly reduced in the policosanol 20 mg group up to 63% ($p < 0.01$) and 42% ($p < 0.05$), respectively, at week 24. For the blood lipid profile, the policosanol 10 mg and 20 mg groups showed significant reductions in total cholesterol (TC) of around 8% ($p = 0.029$) and 13% ($p = 0.0004$), respectively, at week 24 compared with week 0. Serum HDL-C level significantly increased up to 16% and 12% in the policosanol 10 mg ($p = 0.002$) and 20 mg ($p = 0.035$) group, respectively. The policosanol 10 mg and 20 mg groups showed increases in % HDL-C/TC up to 24% ($p = 0.002$) and 28% ($p = 0.0005$), respectively, at week 24, whereas the placebo group showed no notable change. After 24 weeks of policosanol consumption, lipoprotein functionality improved to be more anti-atherogenic; LDL showed more anti-oxidant while HDL showed more anti-glycation properties. The results suggest that long-term policosanol consumption simultaneously reduces both peripheral BP and aortic BP accompanied by elevation of HDL-C and % HDL-C in TC in a dose-dependent manner.

Keywords: policosanol, blood pressure, lipoproteins, apolipoprotein A-I, glycation