Allicin-induced decrease in formation of fatty streaks (atherosclerosis) in mice fed a cholesterol-rich diet.


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Abstract

BACKGROUND: Garlic (Allium sativum) has been considered to exhibit therapeutic features for many years. The effects of garlic on levels of serum lipids and on atherosclerosis have been investigated extensively. We have previously demonstrated that allicin, an active component of garlic, exerts a beneficial effect on lipid profile in hyperlipidemic rabbits.

OBJECTIVE: To investigate the effects of allicin on formation of fatty streaks (atherosclerosis) and lipid profile in mice.

METHODS: Allicin was extracted from garlic and kept in a buffer citrate solution at 4 degrees C. Sixty C57BL/6 mice were fed Paigen diet (17% fat, 1.25% cholesterol) for 15 weeks. Thirty randomly selected animals were administered allicin solution (9 mg/kg) and 30 were administered placebo. Blood lipid profile was evaluated five times during the study. At the end of the 15-week period, the animals were killed and the aortic sinus was evaluated for formation of fatty streaks (atherosclerosis).

RESULTS: We observed no statistically significant differences between blood lipid profiles of groups. Microscopic evaluation of aortic sinus formation of fatty streaks (atherosclerosis), however, showed that values for mice in the allicin-treated group were significantly lower: areas of formation of fatty streaks (atherosclerosis) were 13,440 +/- 3310 and 23,410 +/- 3723 micron 2, respectively, for allicin-treated and control mice (means +/- SEM; P = 0.023).

CONCLUSIONS: These results indicate that allicin reduces formation of fatty streaks (atherosclerosis) in hyperlipidemic mice. These changes do not seem to occur through an alteration in blood lipid profile.

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