A garlic derivative, ajoene, inhibits platelet deposition on severely damaged vessel wall in an in vivo porcine experimental model.

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Abstract
Ajoene, (E,Z)-4,5,9-trithiadodeca-1,6,11-triene 9-oxide, is a potent antiplatelet compound isolated from alcoholic extracts of garlic. In vitro, ajoene reversibly inhibits platelet aggregation as well as the release reaction induced by all known agonists. We used a well characterized perfusion chamber to study the in vivo effects of ajoene on platelet deposition onto a highly thrombogenic, severely damaged arterial wall, obtained by stripping off the intimal layer and exposing tunica media. Platelet-vessel wall interaction and the effect of ajoene was studied under flow conditions of high and low local shear rate that mimics laminar blood flow in small and medium size arteries (1690 sec⁻¹ and 212 sec⁻¹). Our results indicate that administration of ajoene to heparinized animals, significantly prevents thrombus formation at local low blood shear rate. Ajoene does not inhibit binding of vWF to GPIb, therefore, it does not affect platelet adhesion. In fact, although ajoene impairs fibrinogen and vWF (less efficient) binding to GPIIb/IIIa, it does not totally inhibits platelet deposition to the substrates at any of the shear rates used in this study. Our present results, under in vivo flow conditions and in the presence of physiological calcium levels, suggest that ajoene may be potentially useful for the acute prevention of thrombus formation induced by severe vascular damage, mainly in arterial sites with local low shear rates.

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