Antiplatelet Effect of Low Dose Aspirin: Pharmacokinetic/ Pharmacodynamic Analysis

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Antiplatelet effect of aspirin was simultaneously analyzed with pharmacokinetic data in 3 dose groups of 50, 100 and 300 mg oral administration. Six healty male volunteers were recruited in each dose group. Pharmacokinetics were evaluated by multiple blood samplings through venous catheter. Plasma aspirin and salicylate concentrations were determined by high performance liquid chromatography. Antiplatelet effect was measured by bleeding by high performance liquid chromatography. Antiplatelet effect was measured by bleeding time(Simplate method) prolongation and inhibition of *ex vivo* platelet aggregation induced by arachidonic acid and collagen(Aggregometer). Bleeding time was determined at 0, 2, 12, 24, and 48 hours after dose. Platelet aggregation was evaluated at 0, 0.5, 1, 2, 4, 8, 24 and 48 hours after dose.

Plasma aspirin level reached peak 30 to 45 minutes after and detected until 4 hours after dose. Bleeding times were consistently prolonged in 100 mg and 300mg dose group, but it was significantly prolonged until 48 hours in 300 mg dose group. The extent of prolongation was about 2 fold. Arachidonic acid induced platelet aggregation amplitudes were completely inhibited in 3 dose group 3. In some of low dose groups (50, 100 mg) subjects, however, platelet aggregation returned to baseline value by 48 hours. Collagen induced platelet aggregation amplitudes were less affected than those of arachidonic acid in time course and extent. Pharmacodynamic modeling of concentration(area under the concentration-time curve)-response was applied to these data.