

EFFECTS OF SODIUM NITROPRUSSIDE ON PLATELET ADHESION, SUBSEQUENT AGGREGATION AND VASOCONSTRICTION. H.R. Baumgartner, F. Hoffmann-La Roche & Co., Ltd., Basel, Switzerland

Sodium nitroprusside (SNP), a potent vasodilator, has shown beneficial effects in acute myocardial infarction. Since platelets may play an important role in the pathogenesis of myocardial infarction, the effect of SNP on their interaction with rabbit aorta subendothelium was investigated in vivo and under controlled blood flow conditions *ex vivo* and *in vitro*.

One iliac artery and the abdominal aorta were denuded of endothelium by balloon catheter injury during infusion of glucose, SNP at 6 or 12  $\mu\text{g/kg/min}$  in groups of 12, 6 and 7 rabbits respectively. The aorta and their branches were perfuse-fixed under controlled pressure 10 min after denudation. Morphometric evaluation showed dose-dependent and significant ( $2p < 0.01$  or  $0.001$ ) inhibition of platelet spreading, adhesion and aggregation. The latter was abolished at the higher dose of SNP. Denudation and subsequent platelet adhesion caused strong vasoconstriction ( $2p < 0.001$ ) which was inhibited by SNP ( $2p < 0.01$ ).

By exposure of subendothelium to either citrated blood or native blood in a flow chamber (2000  $\text{sec}^{-1}$  shear rate) strong inhibition of spreading and adhesion-induced aggregation was again demonstrated at 6 and 12  $\mu\text{g/kg/min}$  SNP. *In vitro*, adhesion-induced aggregation was completely abolished after the addition of SNP to rabbit (at 20  $\mu\text{g/ml}$ ) or human blood (2  $\mu\text{g/ml}$ ). 1  $\mu\text{g/ml}$  PGE<sub>1</sub> was needed to induce a similar inhibitory effect.

Thus SNP is a strong inhibitor of platelet function and of injury + platelet induced vasoconstriction. These findings may explain its beneficial effect in acute myocardial infarction.

EFFECTS OF VARYING CONCENTRATIONS OF DIETARY LINOLEIC ACID ON PLATELET-RICH PLASMA CLOTTING TIME, PLATELET AGGREGATION AND PHOSPHOLIPID FATTY ACIDS COMPOSITION OF RATS. L. McGregor and S. Renaud. INSERM, U.63, LYON-BRON, FRANCE.

A high intake of saturated fats has been shown, in rats fed drastic diets, to be associated with an acceleration of platelet-rich plasma clotting time, an increased thrombin aggregation and a high incidence of venous thrombosis. Linoleic acid appeared to have an antithrombotic effect. In order to understand the role of dietary linoleic acid in platelet function, the present study was undertaken with different concentrations of linoleic acid (0%, 0.5%, 1% and 6%), provided by corn oil which were added to purified diet high in saturated fat (40% hydrogenated coconut oil) but otherwise completely adequate in any other aspects. These four diets were fed to 4 groups of weanling male Sprague-Dawley rats for 4 months. At the end of the feeding period, platelet-rich plasma clotting time, platelet aggregation to thrombin, ADP, arachidonate, collagen and fatty acid composition of total platelet phospholipids were determined. Rats fed 0%, 0.5%, 1% linoleic acid showed a marked hypercoagulability, hyperaggregability to thrombin, in comparison to 6% linoleic acid-fed rats. Moreover, this hyperaggregability and hypercoagulability were associated with the following increased ratios of platelet phospholipid fatty acids : 20 : 4/18 : 2 and 16 : 1 + 18 : 1 + 20 : 1 + 24 : 1 + 20 : 3w9/18 : 2. It seems that dietary linoleic acid plays a crucial role in platelet functions.