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.15 0584 EFFECT OF PGI_2 AND ITS DERIVATIVES ON PLATELET ADHERENCE, AGGREGATION AND PF3 AVAILABILITY

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10^{-8}M PGI_2-Na completely inhibited collagen induced aggregation of human platelets and the concomitant appearance of platelet factor 3 activity, but did not affect the adherence of platelets to collagen fibrils. At the same time, the presence of PGI_2-Na could prevent the retention of platelets by glass beads.
Comparing to the inhibition of ADP induced aggregation a higher dose of PGI_2-Na was needed to inhibit platelet aggregation by ionophore A23187. Furthermore, unlike ADP aggregation, increasing dose of ionophore could counteract the inhibitory effect of PGI_2-Na. The shift of platelet actin from G to F from during ionophore aggregation could be prevented by appropriate dose of PGI_2-Na.
PGI_2 derivatives (Chinoin, Hungary) with increased stability, although in higher doses, exerted activities similar to PGI_2-Na.

5.30 0585 THE HUMAN COMPLEMENT SYSTEM IN THROMBIN-MEDIATED PLATELET FUNCTION; UPTAKE OF C5-9 COMPLEXES

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Thrombin-mediated platelet function is enhanced by the presence of C3, C5, C6, C7, C8 and C9 of human complement. The interaction of thrombin with its receptor on the platelet membrane initiates activation of complement on the platelet surface. Trypsin mediated platelet function is not enhanced by the addition of complement, probably since trypsin has no receptor on the platelet surface so activation of complement is triggered in the fluid phase and not on the platelet surface. Activation of complement by thrombin led to production of C5-9 complexes on the platelet surface. These complexes were eluted from the platelet membrane and were identified physicochemically and morphologically.

The mechanism of the complement induced enhancement of platelet function is not clear, however it is mediated via the arachidonic acid transformation pathway since this activity was inhibited by known inhibitors of cyclo-oxygenase namely aspirin and indomethacin.

5.45 0586 PLATELET ACTIVATION PATHWAYS OF DOMESTIC ANIMALS. K.M. Meyers*, H. Holmsen, C.I. Seachord, and J.B. Smith, College of Vet. Med., Wash. State University, Pullman, WA; Specialized Center for Thrombosis Research, Temple University, Philadelphia, PA, and Cardaza Foundation, Thomas Jefferson University, Philadelphia, PA.

Platelets secrete substances (ADP/5-HT) which are located in platelet dense granules and activate platelets. Platelets are also activated by compounds formed from arachidonate (thromboxanes/prostaglandins). The contribution of the dense granule pathway and the arachidonate pathway depends upon the amount of substance formed or secreted and the sensitivity of platelets to these substances. A comparative study involving platelets from cattle, horses, pigs, cats, dogs, rabbits and mink was undertaken to evaluate the former. To assess the dense granule pathway platelets were incubated with ^{14}C-adenine to label the metabolic adenine nucleotide pool and the platelets gel filtered. The gel-filtered platelets were treated with thrombin to induce maximal secretion and content and secretion of ATP, ADP, 5-HT, Ca^{2+} and Mg^{2+} determined. Platelets from horses, cows, dogs, pigs and rabbits secreted (expressed as per 10^{11} platelets) approximately 0.5 µMoles while mink and cat platelets secreted between 1.0 and 1.5 µMoles of ADP. Serotonin secretion varied from approximately 1.2 µMoles in cat platelets to about 0.3 µMoles in the horse. To evaluate the arachidonate pathway arachidonate- and thrombin-induced malondialdehyde (MDA) formation and thrombin-induced thromboxane B_2 (T_xB_2) formation was measured. In response to arachidonate there were high MDA producers (cat and dog), medium MDA producers (horse and mink), and low MDA producers (pig and cow). Dog platelets produced large amounts, horses medium amounts and mink, pigs and cows low amounts of MDA and T_xB_2 in response to thrombin.