THE PLATELET STRIP: A NEW MODEL FOR THE STUDY OF THE MECHANOCHEMICAL PROPERTIES OF A PLATELET AGGREGATE Leon Salganicoff, D.Sc., Matteo Russo, M.D., Michael Loughnane, M.S., B.S.E.: Temple University Med. School, Specialized Center for Thrombosis Research and University of Rome Med. School.

A new model, whose purpose is the quantitative study of the corelation between the force developed by a platelet aggregate and morphological, biochemical or pharmacological parameter is described. This preparation is made by centrifuging cold recalcified PRP over a sheer nylon, elastic mesh kept stretched in a hoop inside a specially made centrifuge tube with a solid flat bottom. As a result, the mesh becomes impaled in the flat platelet pellet giving it structural support. The supernatant PPP is decanted and the pellet washed with cold Tyrodes solution to eliminate as much residual plasma as possible. Reheating the preparation at 37° activates the aggregation of the platelets and the coagulation of the residual fibrinogen. The final result is a disc of approximately .3mm thickness with a density 7-8 x 10^7 plat./mm^3. The disc is disassembled, cut in strips which are hung using classical techniques of vascular smooth muscle in a bath, where the force produced by its contraction can be measured either isotonically or isometrically. Forces up to 500-700 mg per strip are produced at maximal contraction. The behavior of the preparation can be followed for periods of up to 5 hours. Under the effect of drugs it shows reversible contraction-relaxation cycles in an all or none mode. $K_{contraction}$ for epinephrine was 10^{-8}M: nor-epinephrine, 10^{-7}M. $K_{relaxation}$ for PGE_1 was 10^{-9}M: sodium nitroprusside, 10^{-8}M:(+)propranolol,10^{-6}M; phentolamine, 10^{-4}M. It also shows reversible, ultraviolet-induced photorelaxation when excited at 366 nm. Similarities with aortic vascular smooth muscle and morphological characteristics will be discussed.

SEROTONIN RELEASE FROM FILTERED AND UNFILTERED HUMAN PLATELETS INDUCED BY ANTIGEN/ANTIBODY COMPLEXES OF DIFFERENT VALENCIES. M. Kazatchkine, J. Caen, Anthea H. Johnson and J.F. Mowbray. Hopital St. Louis, Paris, France and St. Mary's Hospital, London, U.K.

In order to study the nature of receptors for immune complexes (IC) on the surface of platelets, the release of radiolabelled serotonin produced by exposure of platelets to IC of known composition was studied. Free plasma components might alter this reaction, so platelets were used both in platelet rich plasma (PRP) and after gel filtration. As it has been thought that the aggregation of the immunoglobulin molecules through the antigen was neccessary for the release reaction, we have studied complexes made with antigens of different valencies. The antigen was albumen substituted with different numbers of dinitrophenol (DNP) groups, and the antibody rabbit-anti DNP. Polyvalent antigen complexes were also made from bovine serum albumen (BSA) and rabbit anti-BSA antibody. Soluble and insoluble IC made in a variety of ratios with polyvalent antigen induced release both in PRP and in gel filtered platelets. Soluble complexes in antigen excess were the most effective. Complexes of monovalent antigen prepared, using two methods of monovalent substitution, were also capable of inducing release in PRP and in gel filtered platelets, although the complex could not exist in an aggregated form. Release was less than that produced by polyvalent complex, but could be increased by the addition of Cl.

These results show that, at least with monovalent IC, the simultaneous involvement of more than one receptor is not an absolute requirement for platelet release. These receptors for monovalent complexes could be different from the Fc receptors for aggregated immunoglobulins or polyvalent complexes.

EFFECTS OF LECTINS ON BLOOD PLATELETS FROM VARIOUS SPECIES. O. Tangen, B. Karlstam and S. Bygdeman. Pharmacia AB, Uppsala, and Karolinska Institutet at the Serafimer Hospital, Stockholm, Sweden.

Earlier it has been shown that different lectins induce a variable degree of aggregation of platelets. The present study confirmed previous data and demonstrated that wheat germ agglutinin (WGA) was very active, leucoagglutinin had about a tenth of the activity of WGA on a concentration basis, and Con A had a weak aggregating effect on human gel filtered platelets (GFP). Soy bean lectin did not aggregate human GFP.

The fact that adenosine inhibited WGA- and leucoagglutinin-induced aggregation that WGA and Con A caused serotonin release, and that the aggregation curves indicated platelet shape change are indications that the lectins influenced glycosyl moieties involving one or more molecules relevant to release and aggregation reaction.

GFP were markedly more responsive to the lectins than platelets in plasma, probably due to interfering glycosyl groups amongst the plasma constituents.

Platelets from man, rabbit, rat, cow and pig reacted differently towards the lectins, human platelets being the most reactive and bovine and porcine platelets being almost unreactive. These results pose intriguing questions regarding the glycosyl content of platelet membranes in different species and their relation to platelet release and aggregation.