

A STUDY OF POLYMERIZATION SITES IN BOVINE FIBRINOGEN. L. Tranqui, A. Chapel, M. Suscillon. Lab. Hématologie, IRF, Centre d'Etudes Nucléaires, Grenoble, France.

Abnormalities in bovine fibrinogen polymerization have been brought about by slight proteolysis on the native molecule by two purified aminopeptidases that we have called A and B and which come from bacteria. These degraded molecules have a molecular of between 272000 and 250000. The aminopeptidase A induces the polymerization of fibrinogen into ordered structures, the period being 8 nm, when the ionic strength (I) is between 0.1 and 0.2. Fibrinogen modified by the aminopeptidase B precipitates at 4°C ($0.075 < I < 0.2$) into fibre with a major period of 45 nm. The action of thrombin on these modified fibrinogen molecules at $I = 0.3$ gives fibres each with two minor striations, whose distribution was however different. These structures were totally different from those of fibrin fibres with its typical major period of 23 nm and its three minor striations. The analysis of the polypeptide chains, the N-terminal-acids and the amino-acids composition of these degraded fibrinogen molecules enables us to differentiate the respective roles of the polymerization sites in the N and C terminal parts of the A α and B β chains.

Therefore, according to our hypothesis the fibre structures obtained from fibrinogen depend on the type of the sites which are discovered on fibrinogen by enzymatic splits and by slight conformational changes.

QUANTITATIVE ABNORMALITIES OF A α CHAIN MOLECULAR WEIGHT IN THE FIBRINOGEN OF CIRRHOTIC PATIENTS.

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A novel two-stage SDS gel electrophoretic procedure was devised to examine the molecular weight heterogeneity of fibrinogen in small samples of whole plasma from 12 normal and 7 cirrhotic individuals. Fibrinogen was first separated from other plasma proteins on a large pore gel, cut out of the gel, reduced, and separated into its component A α , B β , and γ chains on a second gel. Two major mol wt species--fibrinogen I and II--were observed on the first gel. The ~ 25000 mol wt difference between these two forms reflected a decrease primarily in the size of one of the fibrinogen II A α chains. In both normals and cirrhotic patients fibrinogen II comprised 30% of the total (range 20-35%). Fibrinogen I and II each contained two major high mol wt A α chains--A α /1 and a smaller A α /2--that differ by 3000 mol wt. In normal fibrinogen I, A α /2 comprised 33% of the total A α chains (range 27-41%). In contrast the fibrinogen I of 6 out of the 7 patients had a lower per cent of A α /2 (range 10-25%). Similar quantitative differences were seen in the decreased fraction of A α /2 in the fibrinogen II of cirrhotic patients compared to normals. No correlation was found between per cent fibrinogen II and per cent A α /2 in either normal subjects or cirrhotics. These results suggest that at least two independent processes are responsible for the observed levels of A α chain heterogeneity in normals and cirrhotics and that one of these processes yields a lower than normal fraction of A α /2 chains in the fibrinogen of cirrhotic individuals.

ANOTHER INHERITED ABNORMALITY IN PLASMA FIBRINOGEN. N. B. Bosch, C. L. Arocha-Piñango, A. Rodriguez, A. Ojeda and Z. Carvajal. Banco Municipal de Sangre and IVIC, Caracas, Venezuela la.

A prolonged thrombin and reptilase time with normal fibrinogen concentration in a 9 -- years old girl, with no history of bleeding, prompted us to study the behaviour of her fibrinogen. Thrombin and reptilase time in different conditions, immunoelectrophoresis, immunodiffusion and fibrin polymerization were performed. The thrombin time was partially -- corrected by calcium, ionic strength and increasing concentration of thrombin. Fibrin polymerization rate and monomer aggregation time were moderately abnormal. Immunodiffusion and immunoelectrophoresis showed lines of identity with the normal. The electrophoretic mobility of the α β and γ fibrin chains was normal, but there was a large amount of a -- chain left in the cross-linked fibrin, in the presence of factor XIII. The above results suggest the presence of another fibrinogen variant.