Purification and characterization of lectins from Abrus species .

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Abstract:

Saline extracts prepared from Abrus precatorius and Abrus fructiculosus seeds agglutinated red blood cells. The agglutination was inhibited by D-galactose and lactose. The lectins bound to Sepharose 6B and were eluted with D-galactose. These lectins were separated into an agglutinin and a toxin by chromatography on Diethyl amino ethyl (DEAE) cellulose. The toxin from Abrus fructiculosus seed was named fructin' to distinguish it from Abrus precatorius seed toxin, abrin.

In sodium dodecyl - polyacrylamide gel electrophoresis,(SDS-PAGE) fructin and abrin gave single bands with molecular weights (proposed) 60,320 and 62,500 respectively. After treatment with mercaptoethanol, fructin and abrin were split into 2 bands each with molecular weights 32,360 and 30,200 (fructin), 36,520 and 28,800 (abrin). The agglutinins gave 2 bands each in SDS-PAGE with corresponding molecular weights of 57,480 and 55,650 (A. fructiculosus agglutinin) and 59,600 and 56,380 (A. precatorius agglutinin).

The proposed native molecular weights are 113,130 (. fructiculosus agglutinin) and 115,980 (A. precatorius agglutinin), Alen treated with SDS and f - mercaptoethanol, the agglutinins were split into 3 bands each with corresponding agar molecular weights 38,460, 33,500 and 28,180 (,. fructiculosus agglutinin) and 40,790, 35,590 and 31,260 (A.precatorius agglutinin).

The saline extracts from the two seeds did not interact with Afzelia africana polysaccharide in agar gel double diffusion studies. The toxicity of fructin and A. fructiculosus agglutinin was established on mice, with fructin being about 150 times more toxic than the agglutinin. Antisera formed against abrin and A. precatorius agglutinin did not interact with saline extracts of A. fructiculosus, fructin and A. fructiculosus agglutinin.

Keywords: Red blood cells/ agglutination/ lectins/ toxin/ chromatography/ molecular weights/ diffusion/ saline

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