

Purification and Characterization of Lectins from Abrus Species.

Caiquo, Aspect Wallace Kyemenu

M.Sc. Biochemistry

Department of Biochemistry

Obafemi Awolowo University, Ile Ife, Nigeria

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Abstract:

Saline extracts prepared from *Abrus precatorius* and *Abrus fruticulosus* 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 fruticulosus* 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. fruticulosus* agglutinin) and 59,600 and 56,380 (*A. precatorius* agglutinin).

The proposed native molecular weights are 113,130 (*A. fruticulosus* agglutinin) and 115,980 (*A. precatorius* agglutinin). After treatment with SDS and β -mercaptoethanol, the agglutinins were split into 3 bands each with corresponding agar molecular weights 38,460, 33,500 and 28,180 (*A. fruticulosus* 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. fruticulosus* 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. fruticulosus*, fructin and *A. fruticulosus* agglutinin.

Keywords: Red blood cells/ agglutination/ lectins/ chromatography/ diffusion/ saline/ fructin/ abrin

Supervisor: T. Animashaun