Abstract

Castor bean (*Ricinus communis*. L) seeds were peeled and extracted with phosphate buffer saline solution, using sepharose-4B affinity chromatography & eluting the protein with 0.2M D-Galactose. We obtained *Ricinus communis agglutinin*, abbreviated as R.C.A. Then was passed through Sephadex G-100, which was washed with P.B.S, it was separated into two proteins, they were marked to be RCA-I & RCA-II. RCA-I had agglutinated with the R.B.C cell, but RCA-II had lethal dose response with mice (19±1g), its LD50=0.03 mg/kg body. Freshed castor bean seeds were fertilized and soaked overnight in running tap water & germinated in moist vermiculite. Then put into the growth chamber which was 30°C, 12 hr light, light intensity was 6000 lux. During the plant grew, we gave the plant with Hoagland's solution everyday. Collected its 1st weekly seedling and the plants of 9, 11, 14 & 21 days and divided it into root, stem, leaf, then extracted and purified. According to Lowry method, we determined the lectin content, with electrophoresis, Hem-agglutination ability, animal toxicity & immunoreaction etc; we studied the successation & distribution of R.C.A. during germination. Results showed that the third day growth, the R.C.A content droped down to original one third. After it grew seven days, it became one tenth. With Hemagglutination test, we discovered that even at the site of root, stem, leaf had the R.C.A. But at the nine day growth, only endosperm had a little where in root, stem, leaf which had no lectin. However after 14 day growth; any site of plant had no lectin existed. By passing sephadex G-100 chromatography, we knew that RCA-II was lost more quickly than RCA-I, using animal toxicity test had the same result. By Electrophoresis & Immunology reaction, we identify that the lectin from plant extracts was the same as seeds.

Using R.C.A, Abrin & ConA, treated on general soil fungi & soil bacteria growth. We used cut-plate method & discovered R.C.A. inhibited some saprophyte & faculative growth plant pathogen, especially R.C.A. would effect to some imperfect fungi, such as *Fusarium solani*, *Aspergillus fischeri*, *Murco rouxii* etc, but have a little effect on *Penicillum*, *Cladosporium*, *Rhizotonia*, however R.C.A. have no inhibition to yeast growth. Abrin effected to soil fungi, but ConA concentration was 7mg/ml. showed no inhibition, if ConA conc was 10mg/ml had a little inhibition to *Fusarium solani*.

According to this data, analyzed this structure of fungi cell wall which could be inhibited; that was glucan or chitin cpd. & proved R.C.A. inhibited hyphae extension.