International Journal of Plant Sciences, **Vol. 3 No. 2 : 372-375 (July, 2008)**

Genetic diversity analysis in *Abrus precatorius*

VEENA GUPTA
Germplasm Conservation Division, National Bureau of Plant Genetic Resources, Pusa Campus, NEW DELHI, INDIA
(Accepted : March, 2008)

SUMMARY

Genotypic variations in three *Abrus precatorius* accessions were analyzed using SDS-PAGE protein profile and isozyme pattern. A total of 32 polypeptide bands ranging from Rm value 0.06 to 0.71 in all the three *Abrus* genotypes were found. Maximum number of bands was observed in *Abrus* white (21 bands) and minimum bands in *Abrus* red (16 bands). *Abrus* pink was 60% similar to *Abrus* red and 30% to *Abrus* white on the basis of the protein bands.. A total of three isozymes *viz,* esterase, acid phosphatases and peroxidase were studied in 3 genotypes of *Abrus precatorius*.The isozyme profile for esterase showed monomeric bands while in peroxidase trimeric type of enzymal profile was seen. The isozyme profile for acid phosphatase showed trimeric form of enzyme in *Abrus* red while the other 2 genotypes showed dimeric form. Total amount of soluble protein in all 3 genotypes was estimated by Lowry's method and it was found that protein concentration in *Abrus* red was found to be 20µg/ml, in *Abrus* pink 18µg/ml and *Abrus* white showed 17.4µg/ml. of total soluble proteins. The similarity index analysis of the data suggests that the pink genotype is possibly the natural hybrids of the white and red genotypes.

Key words : Diversity analysis, *Abrus precatorius*, Medicinal plant, SDS-PAGE, Isozyme profile.

Abrus precatorius (Family-Leguminosae), often called the "coral pea" or Rosary Pea is much used in necklaces despite its highly poisonous content of lectins that can cause red blood cells to coagulate. *Abrus precatorius* is a tropical or subtropical climbing plant occurring throughout greater parts of India (Anonymous, 1985), ascending the outer Himalaya up to 1200 m, occasionally planted in gardens. This is a common weed in parts of Africa, Southern Florida, Hawaii, Guam, The Caribbean, and Central and South America.

In Ayurved, the root is often known as Indian Liquorice as it possess sweetish and mucilaginous taste resembling with ordinary liquorices roots. Seeds are purgative, emetic, toxic aphrodisiac, used in nervous disorders and cattle poisoning. Poultice of seeds is used as a suppository to bring abortion. Emetic, alexiteric and alcoholic extract of the seed kernel have analgesic and central nervous system depressant activity. The drug has spasmogenic effect and was found to have relaxant effect on rat uterus.

In India, the seed was called ratti or rati. The seeds are uniform in size, each weighing very close to 2.1875 grains (1 grain equals 0.002286 ounce equals 0.0648 gram). Ratti-weights were used to weigh gemstones. According to Mrs. Grieve (*A Modern Herbal*, 1931, reprinted 1996), "The weight of the famous Kohinoor diamond was ascertained by means of these seeds."

MATERIALS AND METHODS

Physiologically mature seeds of three genotypes of *Abrus precatorius* (IC-310950-red, IC-311747-pink, IC-376060-white) were selected from the National Gene Bank collections received at N.B.P.G.R., New Delhi. Comparative studies on various physiological and biochemical parameters were done on this material and data was recorded.

Morphological parameters as seed weight, seed size, seed shape and seed colour while physiological parameters as germination percentage, seedling vigor (Root and Shoot vigor) and vigor index were studied.

Biochemical parameters as quantitative protein analysis using Lowry's method (Lowry *et al*., 1951) and qualitative analysis of total proteins and isozymes *viz.*, Acid phosphatase, Peroxidase, Esterase, Super oxide Dismutase (SOD) and Alcohol Dehydrogenase (ADH) was done using SDS-PAGE as per the Enzymal assay for Lipid per oxidation, Peroxidase and Amylase was also done using Beckman Spectro-photometer.

Extraction of Proteins and Enzymes was followed according to Dadlani and Varier (1993). For proteins, the gel was removed and fixed in 15% TCA for 16 hours, washed in distilled water and stained in 2% Coomassie Brilliant Blue for 4-5 hours. The gel was scored after washing in distilled water. For isozymes analysis, stains used are 0.5 gm of O–Dianisidine (peroxidase enzyme), Fast blue RR (Acid phosphates), -α-Naphthyl acetate (Esterase), MTT and Riboflavin (Super Oxide Dismutase), MTT and PMS (ADH)) were used. To study the polymorphism at molecular level four primers were used for RAPD analysis in pink genotype only.