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Genetic diversity analysis in *Mucuna pruriens* germplasm using SDS-poly-acrylamide gel eletrophoresis (PAGE)

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SUMMARY
Seed protein analysis in 20 accessions *Mucuna pruriens* germplasm was done using SDS PAGE. A total of eleven bands were observed with apparent molecular weight range of 15KDa -200KDa could be distinguished. At 65% similarities co- efficient, only one accession viz. IC127363 was distinct.

Key words : Electrophoresis, Seed proteins, *Mucuna pruriens*.

In recent years, protein analysis using poly-acrylamide gel eletrophoresis (PAGE) has been considered as a unique and powerful tool for ascertaining the gene homology at the molecular level because of its superior capability for component resolution. Further these protein profiles can be used as taxonomic and evolutionary tools in modern molecular taxonomy. Seed proteins are mainly storage proteins and are not likely to change in dry mature seed. Thus the seed protein profile obtained by various extraction procedures is species specific and is highly stable character. Although uniformity and uniqueness of the seed protein profile are typical of many plant groups, but variations in number and position of various bands in the profile are obvious in many genera. Differences between accession of the same taxon in darkness and thickness of various bands are the most commonly reported types of the variation, suggesting that the formation of many bands in the seed protein profile are under the control of quantitative gene system. Unfortunately except for few genera, extensive screening of the germplasm to uncover the variability in seed proteins is woefully lacking (Ladizinsky and Hymowitz, 1979). The present work on seed protein profile of *Mucuna pruriens* was carried out to study the variations in different accessions of germplasm conserved at National Gene bank.

Mucuna (Family Leguminosae) is a genus of annual or perennial twining herb or shrub distributed in tropics and sub-tropics (Anonymous, 1985). About 15 species occur in India which are grown for forage, green manuring and vegetable etc.The medicinally important species is *Mucuna pruriens* which is used for the commercial production of L dopa. In Indigenous System of Medicine, the roots are used as tonic, diuretic and purgative. They are also used for diseases of nervous system, kidney trouble and dropsy. An ointment prepared from the roots is applied for elephantiasis. The seeds are astringent and tonic, possess slight insecticidal activity. The medicinal activity of the seed is due to 1-3;4-dihydroxy phenyl-alanine or dopa (c-1.5%.) The other alkaloids present are nicotine, pururienine, prurienidine and five other bases designated as base P, base Q ,base R , base S and base X. When tested on frogs prurienine slows down the heart, dilates the blood vessels depresses blood pressure and increases b the peristaltic action of intestine.

MATERIALS AND METHODS

Physiologically mature seeds of 20 *Mucuna* accessions were taken for seed protein analysis from the gene bank collections. Estimation of proteins was done by calorimetrically and electrophoretically both. For the study of total proteins, 2 grams seeds of each accession were ground to fine powder and deffattened for two days using chloroform, acetone and methanol mixture in the ratio of 2:1:1. The proteins were extracted from the defatted dry powder (.01 gm) with 0.5 ml of phosphate buffer (ph 7.0) , mixed thoroughly and was then centrifuged at 12000 rpm for 15 minutes. The extracted proteins were recovered as clear supernatant. Protein content in each sample was estimated using Lowry's Folin test method (Lowry, Rosenbrough, Faar and Randall,1951).

For SDS-PAGE of the total seed proteins, 0.1 gm of the fine defatted seed powder was added to the 0.3 ml of tris-glycine buffer and was left overnight at 10°C. Next day, the samples were centrifuged at 10,000 rpm for 15 minutes. 20 micro liters of the protein samples along with

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