



Short Communication

Protein markers for screening of CLS resistant mungbean [*Vigna radiata* (L.) Wilczek.] genotypes

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Cercospora leaf spot (CLS) is a serious disease of mungbean, [*Vigna radiata* (L.) Wilczek]. It is caused by the fungus *Cercospora cruenta* Sacc., *C. canescens* Ell. or *C. dolchi* Ell. CLS infection may lead to defoliation to the extent of 75% and yield reduction to the tune of 23% [1]. Screening of genotypes resistant to this disease could mitigate such yield losses.

Legume seeds contain 70% globulins, 15-20% albumins and 15-20% glutelins [2]. SDS-polyacrylamide gel electrophoresis (SDS-PAGE) of seed proteins in

mungbean has been effectively employed for genotype characterization and elucidation of evolution and phylogenetic relationship [3, 4]. This approach has been used also for screening of MYMV resistant mungbean genotypes [5]. We report here on the SDS-PAGE analysis of seed albumins as protein markers to distinguish between CLS resistant and susceptible genotypes in this crop.

Ten genotypes of mungbean were used in this study. These included five CLS resistant genotypes:

Table 1. Albumin polypeptides in mungbean genotypes as seen on SDS-PAGE

Band#	R _m value	CLS resistant genotypes					CLS susceptible genotypes				
		Jhainung	ML 2	Jyoti	ML 131	ML 5	Ratila Sel. 1	MH 309	Ranpur local	Sujata	PS 16
1	0.101	+	+	+	+	-	+	+	+	+	+
2	0.126	+	+	+	+	+	+	+	+	+	+
3	0.152	+	+	+	+	+	+	+	+	+	+
4	0.203	+	+	+	+	+	+	+	+	+	+
5	0.228	+	+	+	+	-	+	-	-	+	+
6	0.266	-	+	+	+	+	+	+	+	+	+
7	0.291	+	+	+	+	-	+	+	+	+	+
8	0.304	-	-	-	-	-	-	+	+	-	-
9	0.330	+	+	+	+	+	+	+	+	+	+
10	0.354	+	+	-	-	-	-	+	+	+	+
11	0.418	+	+	+	+	+	+	+	+	+	+
12	0.468	+	+	+	+	+	+	+	+	+	+
13	0.532	-	-	+	+	-	-	+	+	+	+
14	0.557	-	-	+	+	-	-	+	+	+	+
15	0.595	-	-	+	+	-	+	+	+	+	+
16	0.625	-	-	-	-	-	-	-	-	-	+
17	0.670	-	+	-	+	+	+	+	+	+	+
18	0.722	+	+	+	+	+	+	+	+	+	+
19	0.760	+	+	+	+	+	+	+	+	+	+
20	0.781	-	-	-	-	-	+	+	+	+	+
21	0.790	+	+	+	+	+	-	-	-	-	-
22	0.810	+	+	+	+	+	+	+	+	+	+
23	0.823	+	+	+	+	+	+	+	+	+	+

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Jhainmung, ML 2, Jyoti, ML 131 and ML 5; and five CLS susceptible genotypes: Ratila selection 1, MH 309, Ranpur local, Sujata and PS 16. Their interaction phenotypes were studied previously [6].

Seed albumins were extracted following procedures as described by Mohanty *et al.* [7]. Electrophoresis on 12% SDS-polyacrylamide gel was carried out following Laemmli [8].

As many as 23 polypeptide bands with R_m values ranging from 0.101 to 0.823 (Table 1) could be seen in the electrophoregram. Out of these, 13 bands (R_m 0.101, 0.228, 0.266, 0.291, 0.304, 0.354, 0.532, 0.557, 0.595, 0.625, 0.670, 0.781 and 0.790) showed variation in their expression. The polypeptide of R_m 0.790 was seen only in the resistant genotypes. Association of proteins with biotic stress resistance has been reported in French bean and cowpea also [9, 10]. Another polypeptide band of R_m 0.781 was present only in the susceptible genotypes. Presence of such polypeptides has been reported also in genotypes susceptible to MYMV in mungbean [5] and the insect green leafhopper in rice [11]. These two bands with differential expression in the resistant and susceptible classes can be used for direct or indirect screening of CLS resistant mungbean genotypes.

Polypeptide bands have been reported to follow monogenic segregation in mungbean [12]. The nature and extent of association of loci controlling the two polypeptides expressed in CLS resistant and susceptible genotypes is being studied using F_2 data.

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