References

Mederski, H. J. and D. L. Jeffers. 1973. Yield response of soybean varieties grown at two soil moisture stress levels. Agron. J. 65:410-412.

Mingeau, M. 1975. Etude de la sensibilite du Soja a la secheresse. Inf. Tech. CETIOM. 47:1-14.

Sammons, D. J., D. B. Peters and T. Hymowitz. 1978. Screening soybeans for drought resistance. I - Growth chamber procedure. Crop Sci. 18:1050-1055.

Sammons, D. J., D. B. Peters and T. Hymowitz. 1979. Screening soybeans for drought resistance. II - Drought box procedure. Crop Sci. 19:719-722.

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1) Comparison of subunit compositions and isolectin profiles of the seed lectins purified from *Glycine max* and *G. soja*.

The presence of the 120,000 dalton soybean seed lectin (SBL) is controlled by a simple dominant gene designated *Le* (Orf et al., 1978). A recent immunological survey of the USDA soybean [*Glycine max* (L.) Merr.] collection indicated that 2,646 of 2,664 lines are *Le* (Stahlhut and Hymowitz, 1980), and an analogous study of the USDA *G. soja* Sieb. & Zucc. collection indicated that 285 of 559 lines contain SBL (Stahlhut et al., 1981). SBL preparations from seeds of the soybean lines 'Beeson', D68-127, 'Disoy', 'Forrest', 'Harosoy 63', and T-247 apparently are identical; electrophoresis under denaturing conditions separated each lectin into two types of subunits, and isoelectric focusing resolved each into a complex mixture of isolectins (Su et al., 1980). Here I report the results of an analysis of the seed lectins from 93 additional *G. max* lines and from one *G. soja* line. The objectives were (i) to determine if there is variation in subunits or in isolectins of SBL isolated from a representative sample of *G. max* genotypes and (ii) to provide initial biochemical characterization of the *G. soja* seed lectin.

Seeds were kindly provided by Dr. Theodore Hymowitz, University of Illinois, and by Dr. Kuell Hinson, University of Florida. SBL from defatted seed meals was purified to homogeneity by affinity chromatography as described previously (Bhuvaneswari et al., 1977). Polyacrylamide disc gel electrophoresis in the presence of sodium dodecyl sulfate was according to Laemmli

(1970). The polyacrylamide concentration in the separating gels was 10%, and 10 µg samples of the lectin (which had been boiled in the presence of 2-mercaptoethanol) were electrophoresed in 8 x 0.5 cm cylindrical gels at 3 mamp/gel. Protein was stained with Coomassie Brilliant Blue R-250. Lectin samples (40 µg) were isoelectric focused in 5.5 x 0.5 cm gels containing 5% acrylamide and 2% Bio-Lyte 3/10 ampholytes (from Bio-Rad). Focusing was done according to the directions of the ampholyte manufacturer, and gels were stained with Coomassie Brilliant Blue R-250.

There was no observed variation in the subunit composition or in the isolectin profiles of SBL from seeds of the following soybean lines: Ada, Adelphia, A.K. (Harrow), Amsoy, Anoka, Aoda, Bansei (Ames), Bavender Special B, Bombay, Capital, Cayuga, Chippewa, Chusei, Clay, Cloud, Corsoy, Cutler 71, Dunn, Early White Eyebrow, Ennis I, Fabulin, Fiskeby V, Flambeau, Fuji, Funk Delicious, Giant Green, Gibson, Granger, Green and Black, Harbinsoy, Harcor, Hardee, Harman, Harwood, Higan, Hokkaido, Hoosier, Illini, Imperial, Jogun, Jupiter, Kabott, Kagon, Kent, Kim, Kura, Linman 533, Little Wonder, Madison, Magna, Manchu (Lafayette)B, Manchuria 13177, Mandarin, Manitoba Brown, Medium Green, Merit, Mingo, Mokapu Summer, Morse, Norma, Ogemaw, Oksoy, Ontario, Ottawa, Peking, Perry, Portage, Portugal, Protana, Provar, Rampage, Ross, Sato-3, Scott, Seedmakers, Sioux, Soysota, SRF 400, Steele, Swift, Tortoise Egg, Vansoy, Viking, Waseda, Wea, Wilson, Wilson 5B, Wilson 6, Wing Jet, Wisconsin Black, Wolverine, Wye, Yellow Marvel. The results were unexpected because heterogeneity in legume seed lectins often is pronounced and may be under genetic control (Murphy and Goldstein, 1979; Pueppke, 1979). Soybean seeds, however, are apparently of just two types: those that contain a complex mixture of SBL isolectins and those that lack SBL entirely.

Seeds of *G. soja* 339,731 contained a lectin that was identical to *G. max* SBL by the above biochemical criteria. The lectin comprised 1.1% of the protein solubilized from seeds of 339,731 (compared to 1.2% for SBL from both 'Hardee' and 'Jupiter', which were extracted at the same time). Although detailed biochemical screening of *G. soja* lectins is unfinished business, the results presented here indicate that the SBL molecule is structurally conserved in and may be characteristically produced by both *G. soja* and *G. max*.

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References

Bhuvaneswari, T. V., S. G. Pueppke and W. D. Bauer. 1977. Role of lectins in plant-microorganism interactions. I. Binding of soybean lectin to rhizobia. Plant Physiol. 60:486-491.

Laemmli, U.K. 1970. Cleavage of structural proteins during assembly of the head of bacteriophage T4. Nature 227:680-685.

Murphy, L. A. and I. J. Goldstein. 1979. Physical-chemical characterization and carbohydrate-binding activity of the A and B subunits of the *Bandeiraea simplicifolia* I isolectins. Biochemistry 18:4999-5005.

Orf, J. H., T. Hymowitz, S. P. Pull and S. G. Pueppke. 1978. Inheritance of a soybean seed lectin. Crop Sci. 18:899-900.

Pueppke, S. G. 1979. Distribution of lectins in the Jumbo Virginia and Spanish varieties of the peanut, *Arachis hypogaea* L. Plant Physiol. 64: 575-580.

Stahlhut, R. W. and T. Hymowitz. 1980. Screening the USDA soybean germplasm collections for lines lacking the 120,000 dalton soybean lectin. Soybean Genet. Newsl. 7:41-43.

Stahlhut, R. W., T. Hymowitz and J. H. Orf. 1981. Screening the USDA *Glycine soja* collection for presence or absence of a seed lectin. Crop Sci. 21: (in press).

Su, L. C., S. G. Pueppke and H. P. Friedman. 1980. Lectins and the soybean-*Rhizobium* symbiosis. I. Immunological investigations of soybean lines, the seeds of which have been reported to lack the 120,000 dalton soybean lectin. Biochim. Biophys. Acta 629:292-304.

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1) Potential of exotic soybeans in the sub-montane region of Himachal Pradesh (India).

Himachal Pradesh is a hilly state of Northern India, with its global location between $75^{\circ}45'$ - $79^{\circ}04'$ E longitude and $30^{\circ}22'$ - $33^{\circ}12'$ N latitude. In this part of the country, soybean is indigenously grown as a rainy season crop up to an altitude of 1800 m above mean sea level. The indigenous soybean comprise small seeded, twining type low-yielding varieties. An improved variety with medium seed size, profuse branching and prolific bearing had been tested and released for cultivation in this part of the country long before the initiation of the All India Coordinated Project on soybean. With the