Poster Abstract - C.32

VARIATION FOR LECTIN SEED PROTEINS IN A COMMON BEAN (PHASEOLUS VULGARIS L.) GERMPLASM COLLECTION

R. DONNOLI, F. VIGGIANI, G. LOGOZZO, M. DILUCA, P.L. SPAGNOLETTI ZEULI

Dipartimento di Biologia Difesa e Biotecnologie Agro-Forestali, Università degli Studi di Basilicata, Viale dell'Ateneo Lucano10, 85100 Potenza (Italy) - logozzo@unibas.it

lectins, phaseoline, seed proteins, common bean., genetic diversity

In *Phaseolus vulgaris* phaseoline are the most abundant seeds storage protein and variation for their electrophoretic patterns has been used to understand the origin and evolution of this widely cultivated crop plant. Common bean seeds also contain a family of closely related proteins, the lectines, that play an important role in plant protection against predator. Plant lectines are a large family of homologous carbohydrate binding proteins that are present in different organs and tissues of many plant species and particularly in the seeds as in several legume species. In beans, lectins have molecular masses above 31 kD and genetic evidence shows that genes for lectin-related protein family, composed of arcelin, α -amylase inhibitor and phytohemagglutenin are located at the same locus.

In this study a collection of 535 European accessions of *Phaseolus vulgaris* L. from 25 countries (20 from Albania, 19 from Austria, 18 from Bulgaria, 19 from Croatia, 37 from ex Czechoslovakia, 19 from France, 28 from Georgia, 20 from Germany, 12 from ex German Democratic Republic, 17 from Greece, 8 from Hungary, 44 from Italy, 35 from Netherlands, 16 from Poland, 21 from Portugal, 24 from Romania, 23 from Slovakia, 18 from Slovenia, 27 from Sweden, 95 from Spain, 3 from ex Union of Sovietic Rocialist Republic, 1 from United Kindom, 7 from Turkey, 2 from Ukraine, and 2 from Yugoslavia) previously tested for phaseoline variation (75.5% of accessions from Andean gene pool, 'C' and 'T' phaseoline, and 24.5 % accessions of Mesoamerican gene pool, 'S' phaseoline), was analysed for SDS-PAGE lectin patterns and association among phaseoline, lectin patterns and country of origin was investigated.

Results obtained showed overall nine lectin variants ranged from 29 kD to 36 kD.

Three variants include 86.17% of accessions (48.60%, 22.43% and 15.14% respectively). Phaseolins and lectins displayed levels of association. One lectin variant did show association with 'S' phaseolin type, while a second one did show association with Andean phaseolin type and Eastern Europe countries.

Variation for lectin and phaseoline seeds protein could be useful to investigate the distribution Andean and Mesoamerican germplasm in European countries and to identify the most diverse genotypes from different genes pools to be used in breeding programs and in the study of evolutionary patterns of beans in Europe.