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# Inheritance and Linkage of Isozyme Coding Genes in Chickpea

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## Abstract

Genetics of 16 isozymes was determined in chickpea (*Cicer L.*) based on F<sub>2</sub> segregation in interspecific crosses of *Cicer arietinum L.* with *C. reticulatum*

Lad. and *C. echinospermum* Davis and intraspecific crosses of *C. reticulatum*. The enzymes assayed included acid phosphatase (ACP), aconitase (ACO), alcohol dehydrogenase (ADH), amylase (AMY), aspartate aminotransferase (AAT), endopeptidase (ENP), esterase (EST), glucosephosphate isomerase (GPI), leucine aminopeptidase (LAP), peroxidase (PRX), phosphoglucomutase (PGM) and 6-phosphogluconate dehydrogenase (PGD). Subcellular localization was determined for the isozymes of ACO, AAT, GPI, PGM, and PGD. The isozymes AAT-3, GPI-1, PGM-2 and PGD-1 were located in the plastids; ACO-2 and AAT-2 were located in the mitochondria; and ACO-1, AAT-4, GPI-2, PGM-1 and PGD-2 were located in the cytosol. Inheritance was studied for ACP-1, ACO-1, ACO-2, ADH-2, AMY, AAT-2, AAT-3, ENP, EST-2, GPI-2, LAP, PRX-3, PGM-1, PGM-2, PGD-1 and PGD-2. Each of these 16 isozymes exhibited monogenic inheritance. Four linkage groups of isozyme loci were identified: I, Aat-p-23-Enp-17-Pgm-pr, II, Amy-10-Aat-m-9-Est-2-26-Pgd-p-7-Pgm-c; III, Lap-25-Acp-1-7-Adh-2; and IV, Aco-m-27-Prx-3. Several of these linkages were conserved between the tribes Cicereae (*Cicer*) and Vicieae (*Pisum* and *Lens*).

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