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GENETIC DIVERSITY ON AFRICAN EGGPLANT: MOLECULAR AND CHEMICAL ANALYSES

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The term African eggplant describes both the Scarlet eggplant (Solanum aethiopicum group gilo L.) and the gboma eggplant (Solanum macrocarpon L.) (Lester et al. 1990 - Plant Genet Res News 81-82: 17-26). Both the species, belonging the genus *Solanum*, are mainly grown and sprayed in Africa, where it can be consumed as source of edible leaves and fruits (scarlet eggplant), both for nutritional and wealthy purposes. Scarlet or red eggplant is considered of great interest for its typical productions in marginal areas in Europe or in other Continent. This species is also of interest for genetic improvement of related cultivated species (Solanum melongena L.), considering the presence in its germplasm of several traits of agronomic interest. Important research results have been reported in order to transfer in cultivated eggplant the tolerance to Fusarium spp. (Rizza et al. 2002 – Plant Cell Rep 20: 1022-1032), by using somatic hybridization techniques considering the interspecific sexual incompatibility between S. melongena and S. aethiopicum. The level of antioxidant in substances are now in progress, in order to transfer and identify the responsible genes of these traits into cultivated eggplant. Eggplant is known as a vegetable with high level phenolic constituents. Several potential health promoting effects have been ascribed to plant phenolic phytochemicals. A first report on phenolic acid constituents in eggplant fruit from accessions in the USDA germplasm collections were reported (Stommel & Whitaker, 2003 - J Amer Soc Hort Sci 128: 704-710), differences in phenolic acid content were evident among the species and among genotypes within species.

Starting from the collection of scarlet eggplant of different origin, stored at the DiBBA, one hundred accessions were selected and analysed by means of morphological traits, molecular markers, such as AFLP and microsatellites, and for the presence of chlorogenic acid in their fruit. Different accessions of scarlet eggplant normally cultivated in the area of Rotonda (PZ) are present in this collection, considering the interest among several farmers toward this species.

Genetic characterization of the accessions was performed in order to confirm the genetic origin of the accession present in the marginal area of cultivation (Rotonda) and the wide diversity between *gilo* genotypes, already revealed on morphological traits basis. Polymorphic data were utilized in order to obtain dendrograms of genetic similarity that showed clusters in which the genotypes were grouped, particularly, on the basis of geographical origin.

Phenolic acid compounds separated by HPLC were tentatively identified as hydroxycinnamic acid (HCA) derivatives based on HPLC elution times, UV absorbance spectra. These phenolics were grouped into chlorogenic acid isomers and isochlorogenic acid isomers. The total HCA content in scarlet eggplant was low relative to cultivated eggplant. Important differences in total HCA content were detected among the

scarlet eggplant accessions. These results will represent an interesting tool in order to utilize intraspecific hybrids (considering the sexual incompatibility between *S. melongena* and *S. aethiopicum*) and segregant populations for mapping molecular markers associate to the trait or to isolate gene of interest.