Proceedings of the XLIX Italian Society of Agricultural Genetics Annual Congress
Potenza, Italy – 12/15 September, 2005
ISBN **88-900622-6-6**

Poster Abstract - F.17

MOLECULAR CHARACTERIZATION OF TOMATO LOCAL VARIETIES FROM CAMPANIA

P. CRISCITIELLO, G. TORRE, A. COZZOLINO, G. ERCOLANO, M.R. ERCOLANO, A. BARONE

Department of Soil, Plant and Envirorment Sciences, University of Naples, Via Università 100, 80155 Portici (NA), Italy

tomato ecotypes, AFLP fingerprinting, resistance genes, molecular markers

Tomato (*Lycopersicon esculentum* Mill) is one of the most important cultivated species in the world. It is used both as fresh and processing tomatoes, and its production has increased approximately 10% since 1985, also because for many countries tomato is one of main sources of vitamins and minerals. Furthermore, one of most powerful natural antioxidants, the carotenoid lycopene, is found almost exclusively in tomatoes, and its key-role in helping to protect against cancer and heart disease has been recently demonstrated.

Among tomato genetic resources, many local varieties have an important role for their typical and intense flavour and their conservation and use must be preserved, despite of many difficulties of their cultivation on a vast scale mainly due to damages caused by pathogens and parasites.

The aim of the present work was to characterize through molecular markers seven tomato local varieties collected from different cultivated areas in Campania. They were two Sorrento types (Sor ADG, Sor Art), two Vesuvio types (Ves01, 100Schi), two San Marzano types (SM Schi, Sel 8), and one ecotype collected in the Benevento area (Casarbore), compared to both fresh market (Money Maker) and processed (01P60A) tomato varieties. In order to obtain a molecular fingerprinting, all genotypes were analysed with AFLP markers, using the enzyme combinations *Eco*RI-*Mse*I and *Pst*I-*Mse*I. As expected, in the first case a very high polymorphism was observed among the different genotypes using 7 primer combinations, with a mean value of more than 90% polymorphic bands. This analysis allowed the identification of a specific pattern for each local variety. On the other side, using the enzyme *Pst*I combined with *Mse*I, a very low level (around 5%) of polymorphism was evidenced and new analyses are in progress with the aim of identifying a specific pattern for each tomato type.

The AFLP characterization of local varieties was integrated with molecular analysis using specific SCAR or CAPS markers linked to 7 resistance genes, which control damages usually inferred to tomatoes by various pathogens. All local varieties were susceptible to six out of seven pathogens, since their DNA patterns after PCR amplification and digestion were similar to those of susceptible controls. Only the CAPS marker designed on one resistance gene to *Verticillium dahliae* (*Ve2*) showed polymorphisms among local varieties, some of which showed sequences similar to that of resistant genotypes, as reported in GenBank. In order to verify the presence of resistance gene *Ve2* in these 3 local varieties, the *in vivo* pathogen test of resistance to *V. dahliae* is in progress.

This work was funded by the Project “Risorse Genetiche” financed by MiPAF.