

MOLECULAR CHARACTERIZATION OF *PISTACIA* GENUS USING RAPD MARKERS

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The genus *Pistacia* of the Anacardiaceae family consists of at least eleven species with dioecious plants. Some cases of monoecism have been reported for *P. vera*, *P. atlantica* and *P. terebinthus*. *P. vera* is an important crop tree that produces commercially valuable nuts. Dioecism represents an inconvenience to pistachio breeding since the long juvenile period (5-8 years) hampers sex determination until flowering. In this outline a molecular marker linked to sex could facilitate breeding allowing early seedling selection with the saving of time and economic resources. Very little work has been done at molecular level on the *Pistacia* genus and no linkage map and only very few codominant markers (SSRs) are so far available. As to this in the last years most of the researches have been based on RAPDs (Random Amplified Polymorphic Dna) for the identification of a marker able to early determine plant gender. The RAPD fragment OPO08₉₄₅ was found to distinguish male from female plants within *P. vera*.

In the present study 34 *Pistacia* genotypes have been characterised with RAPD markers: 2 M and 6 monoecious from *P. terebinthus*, 1 M from *P. integerrima*, 3 M unknown, 15 F and 6 M from *P. vera* and 1 M *P. vera* x *P. terebinthus* hybrid. All the accessions analysed belong to the germplasm collection of the CRA- ISF of Rome and among the *P. terebinthus* genotypes four are monoecious and were found in the Rodopi Mountains in Bulgaria in 2003. The monoecious trees bear male and female flowers in different inflorescences and in one case both are present in the same cluster. Nine RAPD primers, namely OPA01, OPA03, OPA12, OPAD16, OPK09, OPK19, OPL11, OPO08 and OPP03 have been employed for the analysis. A total of 195 polymorphic fragments were obtained considering for the scoring only the bands between 500 and 1500 bp. A high level of polymorphism was found within the genus. As expected from literature the marker OPO08₉₄₅ was present in all the females and absent in all *P. vera* males, but it was also present in one *P. terebinthus*, one *P. integerrima* and in the three unknown males. This marker was absent in all but one the monoecious genotypes. The primer OPK19 showed a characteristic amplification pattern of a single 1100 bp band in the monoecious *P. terebinthus*. The same fragment was also present as a major amplification product in dioecious *P. terebinthus* plants, in *P. integerrima*, in two unknown wild type and in the *P. vera* x *P. terebinthus* hybrid.

In the attempt to find a strict association to sex further RAPD primers will be tested and new molecular markers will be developed from reproductive tissues.

Abbreviations: M, male; F, female