GENETICS AND MOLECULAR STUDY OF POWDERY MILDEW 
(ERYSIPHE PISI SYD.) RESISTANCE IN PEA (PISUM SATIVUM L.)

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resistance gene, plant disease, Pisum sativum, mutagenesis

Grain legumes assume huge importance for their high protein content and quality and the ability to fix atmospheric nitrogen. Pea (Pisum sativum) is the highest yielding grain legume grown both for vegetable and grain purpose. It is used for human food, animal feed, forage and green manure.

The main bottleneck pea cultivation in the temperate regions is the powdery mildew disease caused by the ascomycete Erysiphe polygoni (DC) which is an obligate parasite (requires living material to feed on and to develop). The disease can kill the leaves, reducing the photosynthetic area. Severe cases defoliate plants, which reduces the dry matter of the fruit. Resistant sources against this pathogen are available in pea germplasm and there are a number of powdery mildew resistant pea varieties on the market but, usually, not well adapted to the typical environmental conditions of southern Italy. Powdery mildew resistance is inherited as a recessive trait (genes er-1 and er-2) and this inheritance is complete. There is no such thing as partial resistance to powdery mildew.

Induced mutations have played an important role in the genetic improvement of cultivated plants. Physical and chemical mutagenesis of pea has produced genotypes with higher productivity, altered flowering, maturation characteristics and powdery mildew resistance as well as.

In a previous work the results of the analysis of chlorophyll and morpho-biological mutations induced by treatments with diethylsulphate in seeds of one lines of Pisum sativum have been reported.

The results of this experiment brought about the obtaining of a plant resistant to powdery mildew. We have been carrying out the self crossing of this plant (M4 line) and one plant M4 selected has been crossed with the original susceptible one. In a present works we report the molecular and genetic analysis obtained from F1 and F2 progeny. The aim of the present research is the molecular and genetic characterisation of the pea line resistant to powdery mildew in order to improve this crop.