rolD ONCOGENE STIMULATES MERISTEMS OF BOTH AXILLARY SHOOTS AND LATERAL AND ADVENTITIOUS ROOTS IN ARABIDOPSIS PLANTS


*) Dept. of Genetics and Molecular Biology, University "La Sapienza" of Rome, P.le Aldo Moro 5, Roma
**) Dept. of Plant Biology, University "La Sapienza" of Rome, P.le Aldo Moro 5, Roma

crolD, arabidopsis, meristems, flowering, rooting

We are previously demonstrated that rolD oncogene from Agrobacterium rhizogenes stimulates in tobacco plants an early and enhanced flowering process through formation of supranumerary axillary meristems which develop as syleptic inflorescences.

The effect of rolD gene on flowering is also shown in some other plants such as tomato, and osteospermum oecklonis.

Our study in Arabidopsis confirms the effect of rolD on flowering, because the main event observed in the transgenic plants is an enhancement of coinflorescence formation. The histological analysis shows that, since very early in plant development, meristems are formed at the axils of the rosette leaves. These meristems develop as vegetative buds, the most of which becoming coinflorcescences. Moreover plants expressing rolD also show an altered development of the root apparatus. In particular secondary (lateral) and adventitious roots are promoted. Thin cell cultures cultured in vitro confirm this role of rolD in enhancing post-embrionic root meristems. Infact the rhizogenic response increases both, in the presence of auxin and under hormone free conditions.

It is known that secondary and adventitious roots are specifically regulated by auxin. To shed more light on the role of rolD on post-embrionic rhizogenesis, complementation analyses between some auxin mutants, with a reduced secondary roots formation and rolD plants are in progress.

Since the rolD gene product has an ornithine ciclodeaminase activity, a key step in the proline synthesis, we discuss the possible role of this aminoacid in the rolD -induced meristem formation during plant development.