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DRL1 Regulates Adaxial Leaf Patterning and Shoot Apical Meristem Activity

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Leaf shape is controlled early on by initiation at the shoot apical meristem (SAM), as well as by changes in the rates and planes of cell division and the polarity-dependent differentiation of leaf cells. Therefore, the mechanism by which SAM is maintained is essential to leaf formation. Here, we report the isolation of a novel recessive mutant *356-2*, a new *drl1* mutant allele of *Arabidopsis*. The *drl1-101* mutant produces narrow, filamentous leaves and defective meristems. Its palisade cells have a spongy cell-like structure and are fewer in number, indicating that the leaves are abaxialized. Our study indicates that *DRL1* play a crucial role in SAM activity, vascular tissue formation, and leaf polarity.

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Study on Cell Suspension and Cloning of a Gene Encoding Phenylalanine Ammonia Lyase of *Cistanche deserticola*

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In this study, callus and cell suspension culture of *Cistanche deserticola* were established and the quality control and bioactivity were carried out by contents determination and in-vitro anti-oxidant activity test. The results indicated that, the callus and cell suspension culture had higher contents of phenylethanoid glycosides and showed stronger in vitro anti-oxidant activity compared with wild materials of *C. deserticola*. Aiming at increasing the contents of effective compounds at molecular level, we cloned the full length of the gene encoding phenylalanine ammonia lyase from fresh sterile callus of *C. deserticola* by RACE PCR. The PAL gene is 2.13 kb long and encodes a 710 amino acid polypeptide.

Key words: *Cistanche deserticola*, Phenylalanine ammonia lyase, in-vitro anti-oxidant activity, phenylethanoid glycosides