

### **Abnormalities in microspore derived embryos of *Datura metel***

Microspore derived embryos have the gametophytic number of chromosomes or the haploid number of chromosomes. Since they are haploids there is a high possibility of expressing mutant and recessive genes, which causes abnormalities in the basic body organization of the embryo. The body organization of the flowering plants follow two types of patterns: axial pattern which arrange along the single axis of polarity and radial pattern which is more clearly seen in the three major tissues of the hypocotyls (epidermis, inner ground tissue and the central vascular strand ). Mutations affect both these patterns and shape. In this study we have identified the main deletion patterns, which are responsible for deleting essential parts of microspore-derived embryos of *Datura metel*.

Microspore derived embryos were obtained by anther culture of *Datura metel* in Nitsch medium with post culture manipulations. The abnormalities of the basic body organization of the embryo were counted in random samples of haploid embryos. The total abnormality and percentage abnormalities for each deletion pattern were determined.

Four major deletions from the basic embryonal pattern were observed.

1. Apical deletion : the two cotyledons and shoot meristum were absent while hypocotyls and the root was intact.
2. Central deletion : the hypocotyls was absent. The two cotyledons, shoot meristum appear directly attached to the root.
3. Basal deletion: both hypocotyls and root were absent. The two cotyledons are present with the shoot meristum, which were tapering off.
4. Terminal deletion: the terminals were deleted and only the hypocotyls was present.

Apart from the above categories there were intermediate patterns like mono and polycotyledonary embryos and cotyledons showing different degrees of fusion.

Mutant genes affect the basic body organization of the embryo/seedling. The mutant genes are expressed in haploid embryos. Most of the time the mutants affect the axial pattern resulting in four major deletions that causes complete omission of the essential parts of the embryo.