The study of staminate and hermaphrodite flowers on floral development and microsporogenesis in Koelreuteria henryi Dummer (Sapindaceae)

Introduction

Koelreuteria henryi Dummer (Sapindaceae) is a deciduous tree and endemic to Taiwan. This tree has been widely cultivated as a road tree. It possesses pleiothyrsed mixed compound cyme. It is andromonoecious system with staminate and hermaphrodite flowers on the same plant, fertile and sterile pollen grains were produced respectively. In this study, with aids of LM, TEM, SEM and histochemical observations, it is attempted to reveal (1) the floral initiation and sex expression in microsporogenesis; (2) the cellular and organellar transformations during the microsporogenesis; (3) the anther and pollen wall configuration at anthesis; and (4) the similarity and dissimilarity in pollen morphology, viability and cytoplasmic content changes in staminate and hermaphrodite flowers.

Results

Floral development

Gender expression, anthesis & dehiscence

Microsporogenesis & pollen wall development

Pollen germination & histochemical analysis of pollen

Conclusion

Flowers’ sex differentiation in K. henryi are potentially bisexual and only at the final stage, of development sex organs could be defined.

The pollenkitt in the secretory tapetum in K. henryi provided has double origin.

Staminate flowers and their pollen in the two sexual morphs have significantly differ in structure and biology.

Micrographs and illustrations are not transcribed here. The text provides a comprehensive overview of the floral development and pollen characteristics of staminate and hermaphrodite flowers of Koelreuteria henryi.