



## A cytological study of anther and pollen development in *Camellia oleifera*

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**ABSTRACT.** The plant species *Camellia oleifera* is an important producer of edible oil in China. However, it suffers from a low fruit-setting rate. This study used high resolution scanning electron microscopy of semi-thin tissue sections to investigate anther development and pollen formation, and to determine whether problems in forming functional pollen cause low seed setting rates. During anther development, cell sizes within the epidermis and endothecium gradually increase, and at the beginning of the microsporocyte phase, the cells become highly vacuolated. The cell walls of the inner wall cells thicken in a ribbon pattern during the later part of the two-cell pollen stage. Middle layer cells become flattened during the later part of the secondary sporogenous cell stage. A tapetum also forms at this stage; the secondary sporogenous cells begin to degrade at the early microspore stage and completely disappear by the time the pollen is mature, thus forming a glandular tapetum. In microsporocyte, cytokinesis occurs simultaneously with microsporocyte meiosis, and a tetrahedral arrangement is present in tetrads. Reproductive cells begin to form at the later stage of microsporogenesis; the nuclei of

the reproductive cells are enlarged as the reproductive cells begin to move away from the pollen wall. Two-cell pollen is first formed after reproductive cells have left the pollen wall, and the number of inclusions in the pollen subsequently increases. The pollen matures for 5-8 days before flowering occurs. No pollen abortion phenomena were observed, suggesting that anther development in *C. oleifera* is normal and that functional pollen are formed.

**Key words:** *Camellia oleifera*; Pollen; Angiosperms; Male gametophyte; Microsporogenesis; Reproduction