Novel genetic male sterility developed in \((Capsicum annuum \times C. chinense) \times C. pubescens\) and induced by HNO\(_2\) showing Mendelian inheritance and aborted at telophase of microspore mother cell stage

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ABSTRACT. A novel genetic male sterile germplasm was developed by successively crossing of \((C. annuum \times C. chinense) \times C. pubescens\) and by chemical mutagenesis in pepper. The sterile anthers showed morphological abnormalities, but pistils developed normally with fine pollination capability. We investigated fertility segregation through sib-crossing of the same strains and test crossing by male sterile plants with 6 advanced inbred lines. The results showed that male fertility in the pepper was dominant in the F\(_1\) generation and segregated at a rate of 3:1 in the F\(_2\) generation, suggesting that monogenic male sterility
was recessive and conformed to Mendelian inheritance. Cyto-anatomy analysis revealed that microspore abortion of sterile anthers occurred during telophase in the microspore mother cell stage when tapetal cells showed excessive vacuolation, resulting in occupation of the loculi. The microspore mother cells self-destructed and autolyzed with the tapetum so that meiosis in pollen mother cells could not proceed past the tetrad stage.

**Key words:** Distant hybridization; Genetic male sterility; Pepper; Microspore abortion