

Production of Interspecific Hybrids of *Dianthus* species by Ovule Culture

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Various *Dianthus* species are widely distributed in Japan, and some of them have quite high ornamental value because of their lovely flowers. However, almost all of these species have characteristics which make them unsuitable for commercial production, for instance, a single flowering season and a dislike of hot summers. Also, it is difficult to obtain viable seeds from crosses of the species because of the degeneration of the hybrid embryos. Therefore, little effective breeding has occurred in the past.

In the present study, interspecific crosses were carried out between *D. chinensis* and various other *Dianthus* species and the resultant interspecific hybrids were successfully obtained by using the embryo rescue technique.

MATERIALS AND METHODS

Several plants of *D. chinensis*, *D. caesius*, *D. plumarius*, *D. superbus*, and *D. caryophyllus* were used. After cross pollinations between *D. chinensis* and the other species, the ovaries were collected and sterilized with 70% ethyl alcohol for 30 sec, and 2.0% sodium hypochlorite for 5 min. Then, they were rinsed with sterilized water.

The ovules were excised from the ovaries and put onto a culture medium containing agar-solidified, modified MS medium.

The plantlets which developed in the ovule culture were transplanted to pots and acclimatized. They were further grown on in a greenhouse and were examined for their characteristics.

RESULTS AND DISCUSSION

Seed production by normal methods, crossing *D. chinensis* with other *Dianthus* species was tried and several viable seeds were obtained from the crosses *D. chinensis* × *D. superbus* and *D. chinensis* × *D. plumarius*. However, viable mature seeds were not obtained from any other crosses.

Well developed plantlets were obtained from all crosses between *D. chinensis* and other *Dianthus* species using ovule culture. Therefore, this system must be considered an effective method for producing interspecific hybrids of *Dianthus*.

The plantlets were grown on in a greenhouse and their characteristics, especially flowering time and heat resistance were monitored. The cross between *D. chinensis* and *D. caesius* produced one plant which flowered almost year-round with good heat resistance and a compact, pretty flower. This hybrid is now the subject of an application for plant breeder's rights under the name 'Little Princess'.