

A revised medium for Freesia meristem cultures

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Accepted 4 January, 1968

The meristem culture technique has been used to obtain virus-free Freesia plants (Brants and Vermeulen, 1965). Growth on four different media was compared but on all of them the development of the meristems remained poor. At most 12% of the total number of meristems isolated developed into plants.

Freesia plants can be contaminated with Phaseolus virus 2 and with Freesia mosaic virus (van Koot et al., 1954; Smith, 1957). It is possible that by using the meristem culture technique not all the viruses are removed from the tissue, depending on the size of the meristematic vegetation point that is excised.

Considering the advantages of virus-free plants, efforts were made to find a better medium for meristem cultures of Freesia. After several trials a medium was obtained on which meristems developed satisfactorily. This medium contained saccharose instead of glucose. About 80% of the total number of isolated meristems started growing. Three weeks after isolation the cultures showed already a green tip and the beginning of root formation. This phenomenon was never observed with the media used before. A vigorous growth and early development was obvious as compared with former results.

The medium had the following composition:

(a) macro-elements

NH_4NO_3	1650 mg/l	$\text{MgSO}_4 \cdot 2\text{H}_2\text{O}$	370 mg/l
KNO_3	1900	KH_2PO_4	170
$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	440		

(b) micro-elements of Heller's solution (Gautheret, 1959, p. 12)

(c) vitamins etc.

thiamine	10^{-6}	Ca-panthothenate	10^{-6}
cysteine	10^{-6}	nicotinic acid	10^{-6}
inositol	10^{-4}	glycine	2×10^{-6}
pyridoxin	10^{-6}	adenine	5×10^{-6}
biotin	10^{-6}	N.A.A.	10^{-6}
casein hydrolysate	500 mg/l		

(d) saccharose 3%

(e) agar 1%

Freesia corms of the varieties 'White Swan', 'Oranje Zon', 'Golden Yellow', 'Saffier', 'Prinses Marijke', 'Eldorado', 'Blauwe Wimpel', 'Pimpernel', 'Rheinland', 'Snow Queen', 'Orange Favourite', 'Momento', and several ones under number were used for meristem cultures. Up till now virus-free plants were obtained from 'White Swan', 'Saffier', 'Rheinland', 'Eldorado' and from one Freesia variety under number. In general 75% of the plants grown from meristem cultures reacted negatively in a serological test for Freesia mosaic virus and Phaseolus virus 2.

The revised medium makes it possible to use the meristem culture technique on a larger scale.

Samenvatting

Een gewijzigd medium voor meristee cultures van Freesia

Voor het verkrijgen van virusvrije Freesia-planten werden meristee cultures ingezet. Enkele wijzigingen in het voedingsmedium gaven een aanzienlijke verbetering in de groei en ontwikkeling van de Freesia-meristemen. Na drie weken was reeds een klein groen topje gevormd en trad een begin van wortelvorming op. Tot nu toe reageerden planten van vijf Freesia-rassen negatief bij serologische toetsing.

References

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