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Effect of Medium and Culture Temperature on *in vitro* Tubercle Formation of Grafted-cacti "Bimoran" (*Gymnocalycium mihanovichii* Br. & R.)

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Objectives

In vitro culture of *Gymnocalycium mihanovichii* Br. & R. has been carried out through *in vitro* grafting of axillary buds on *Hylocereus trigonus*. However *in vitro* grafting has problems on complicated and time consuming procedure, which result in low multiplication efficiency and high production cost. The objective of this study was to establish direct tubercle formation without *in vitro* grafting. To determine optimal culture conditions for the tubercle formation, experiments were conducted on medium composition, sucrose concentration, growth regulators and air temperature.

Materials and Methods

1. Materials: Axillary buds of *ex-vitro* tubercles (10~15mm in diameter) and *in vitro* tubercles (0.3~0.5mm in diameter).
2. Methods: Medium type (MS, 1/2MS, Hyponex); Sucrose concentration (3, 6, 9 12%); Plant growth regulator (Kinetin, BAP, TDZ, NAA); Position of the axillary bud (upper, lower); Air temperature (25°C for 60 days, 30°C for 60 days, 25°C for 30 days and 30°C for the rest 30 days, 30°C for 30 days and 25°C for the rest 30 days).

Results and Discussion

In vitro tubercle formation of *Gymnocalycium mihanovichii* Br. & R. was greatest on 1/2MS medium supplemented with 6% sucrose, 9.08 μM TDZ and 0.05 μM NAA. Tubercle formation was affected by the position of axillary buds in the tubercles. Axillary buds in upper part induced higher tubercle formation compared to those in lower part. Days to tubercle formation were shortened when the air temperature was maintained at 30°C or altered from 30°C to 25°C after 30days of culture. More than 66.7% of tubercles were formed from the axillary buds under the culture conditions.

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