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## Production of Virus-free Plantlets by Heat and Antiviral Agent Treatment combined with Apical Meristem Culture in Sweetpotato (*Ipomoea batatas* L.)

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### Objectives

This study was carried out to acquire virus-free plants by apical meristem culture on MS medium applied some modifying factors as heat and an antiviral agent, amantadine in sweetpotato mainly propagated vegetatively.

### Materials and Methods

1. Materials: *Ipomoea batatas* L. cv. Yulmi and White Star
2. Methods: Heat treatment for 2 weeks at 35°C  
Amantadine treatment at 5, 10, 20 mg/L and control  
Large and small size of apical meristem culture in MS medium with plant regulators  
RT-PCR analysis for detecting SPFMV

### Results and Discussion

The effect of heat pre-treatment to the apical meristem with 3 to 4 leaf primordia at 35°C for 2 weeks before culture was evaluated for virus elimination. The apical meristem was cultured for 2 months. All plantlets derived from the apical meristem were infected with SPFMV by investigation of RT-PCR analysis. Both apical meristem culture of 1~2 leaf primordia (small) or 3~4 leaf primordia (large) plus amantadine treatment were used to eliminate virus in cultured plants of cv. 'Yulmi'. Through small meristem culture without amantadine, 41.7% of virus-free plantlets were obtained, whereas the addition of amantadine at 10 or 20 mg/L produced 100% of virus-free plantlets though regeneration rate was very low in the MS medium containing 20 mg/L of amantadine. There was no virus-free plantlets in large meristem culture without amantadine. The highest percentage (55.5%) in large meristem culture was obtained in MS medium containing 20 mg/L of amantadine. The apical meristem culture of 'Yulmi' was effective for obtaining virus-free plants when the meristem size was at the stage of 1~2 leaf primordia (small) contained amantadine in the medium. When both heat and amantadine treatment were applied to large meristem of 'Yulmi', amantadine at 10 mg/L with heat treatment was effective in obtaining virus-free plants. With the small meristem culture of 'White Star' produced 100% of virus-free plant without amantadine. In the case of large meristem culture, there was no virus-free plants without amantadine, while 76.9% of virus-free plants was obtained in 20 mg/L of amantadine.

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