

## Abstract

Passion fruit is a vine species of the Passifloraceae family. In Thailand, the passion fruit species No.2, with purple-skinned, was selected and promoted by the Royal Project Foundation. The dominant characteristics of the passion fruit No.2 are of the large size, high productivity, sweet taste and rich of aroma. However, the passion fruit No.2 cultivation has major problems according to the “passion fruit woodiness virus (PWV)” disease caused by a species of potyvirus in seeding. The disease reduces the yield and the fruit quality. Plant tissue culture is utilized as an effective technique for producing large numbers of identical copies of a plant from its mother plant and this techniques can be applied to virus-free plant production. This research aimed to investigate the suitable micropropagation method for production of virus-free passion fruit. From the results, the suitable condition for shoot cultivation was obtained from the modified Murashige and Skoog medium supplement with Fe as a chelate from FeNa-EDDHA instead of  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$  and  $\text{Na}_2\text{EDTA} \cdot 2\text{H}_2\text{O}$  containing 30 g/L of sucrose (MSD [30] medium) and supplement with 1 mg/L BAP. In these conditions had the highest average of shoot length and obtained the plantlet has healthy shoots and leaves after 8 weeks of cultivation. However, spontaneous rooting was not occurred in all most of the obtained shoots. The root induction step is nessessery for micropropagation of passion fruit No.2. From the results, the suitable of root induction medium was the semisolid basal MS medium supplement with 0.5 mg/L IBA. The micropropagation method for the production of virus-free passion fruit involves major four stages: (1) selection and collection of virus-free passion fruit shoots as a source of explants (2) explant preparation, sterilization and initiation of cultures (3) shoot elongation and multiplication and (4) induction of root and transference to soil. In case of the grafting for the production of virus-free passion fruit, it can be use the in vitro healthy shoot derived from virus-free passion fruit explants were used as scion and seedling of virus-free passion fruit were used as root stock.