In vitro propagation of orchid
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ABSTRACT

In vitro culture is a branch of plant biotechnology, which is a set of techniques for vegetative propagation of plants in a defined nutrient medium and under controlled environmental conditions. The advantage of in vitro propagation is that the propagation can start with very small amount of plant material representing the initial explants, which is very important in the protection of endangered and rare species. As well, this technique is suitable also for plants that have a problem propagating by seeds. There are a lot of commercial orchids that are artificially grown for their beautiful flowers. The orchid produces a huge number of seeds but the seeds can not germinate easily in nature due to the absence of endosperm in the seeds. Because of that, orchid has been propagated vegetatively, which is very slow process. In vitro culture techniques are now adopted for rapid propagation of commercially important orchid species. This investigation was undertaken to establish an efficient regeneration protocol for micropropagation of Phalaenopsis. Nodal segments were used as experimental materials which were surface sterilized and the nodals were excised. The isolated nodal segments were cultured in MS medium (Murashige and Skoog, 1962) supplemented with 0.5 mg/l of cytokinin (BAP) and 0.1mg/l of auxin (IBA). Explants were cultured in the growth room under 21°C ± 2°C temperature with a photoperiod of 16 hours of day and 8 hours of night. After two months of culture regenerated shoots were 75% and they were transferred to fresh Lindemann orchid medium. The medium contains macronutrients and micronutrients as described by Lindemann et al. in 1970. In basal of young plantlets appears new buds and starting developing air roots. The well developed Phalaenopsis plantlets were successfully adapted in the potting mixture containing coconut husk and peat moss under natural condition.

Key words: orchid, Phalaenopsis, in vitro propagation, nodal segment, growth medium

1. Introduction into culture

Before introduction of explants into culture, surface sterilization and explant isolation of orchid - Phalaenopsis must be done. After sterilization explant of orchid is rinsed and placed in a test tube containing sterilized culture medium.

2. Multiplications

During the multiplication period of micropropagation the goal is proliferation of shoots by using a combination and balancing of hormones and rapidly generate many more shoots and thus more plantlets. This can be continued indefinitely until contamination occurs or the plants appear deformed.

3. Rooting

Multiplied shoots were separated and transferred to a new culture medium for rooting. The goal is to form complete virus free plants with viable root and shoot systems.

4. Adaptation

Transfer of plantlets to the soil is the last phase of micropropagation. At this stage, the plantlets are transferred from the vessel in which they were cultivated in the pots in substrate for orchid growing and adapt to grow in external conditions.

5. Planting

After adaptation the regenerated Phalaenopsis plantlets are suitable for growth and development in external conditions and for blooming.