

Siriporn Chuensamrong 2009 : Effects of Light Emitting Diodes (LEDs) and Medium on *In Vitro* Orchid Seed Germination of *Rhynchosytilis gigantea*, *Dendrobium findlayanum* and Development on Protocorm-like Body of *Renanstytilis* Hybrid. Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Associate Professor Chitrapan Piluek, M.S. 107 pages.

The study on the effects of Light Emitting Diodes (LEDs); red, blue and white light compared with fluorescent light on *in vitro* seed germination of *Rhynchosytilis gigantea*, *Dendrobium findlayanum* and protocorm-like body (PLBs) development of *Renanstytilis* hybrid were conducted. This study was divided into 2 experiments. The first experiment was the effects of light on seed germination and seedling growth of *Rhynchosytilis gigantea*, *Dendrobium findlayanum* when culture on modified Vacin-Went medium (VW). After germination for 2 months, *Rhynchosytilis gigantea* had the highest seed germination percentage under 80% red plus 20% blue LEDs while the highest growth index was found on medium added with 100 g/l potato extract under 90% red plus 10% blue LEDs. Seed germination percentage of *Dendrobium findlayanum* was no significantly difference in all type of light sources but had the highest growth index under 100% red LEDs. Then 2 months old seedlings were transplanted to new medium for 2 months. It was found that *Rhynchosytilis gigantea* had the highest average leaf number, leaf length, root number and root length when grown under 50% red plus 50% white LEDs. *Dendrobium findlayanum* seedlings showed the highest growth under fluorescent and 50% red plus 50% white LEDs when cultured on VW added with banana 50 g/l. The effects of light and paclobutrazol on seedlings growth, before transplanted to the nursery, were investigated. The results showed that *Rhynchosytilis gigantea* seedlings had better growth under all LEDs than under fluorescent light when cultured on VW without paclobutrazol. While *Dendrobium findlayanum* seedlings had similar growth under all light sources and had more fresh weight and number of roots when cultured on VW supplemented with paclobutrazol than without paclobutrazol. On the second experiment, the research was done on protocorm-like bodies (PLBs) development of *Renanstytilis* hybrid. Three types of PLBs are selected; 1. Transparency green PLBs, 2. Solid green PLBs and 3. PLBs with shoot tip 1-2 mm long. These PLBs were cultured on modified Vacin-Went medium supplemented with 5, 10 g/l sugar and 0, 150 ml/l coconut water under 5 types of light source for 2 months. The results showed that the type 2 and 3 PLBs showed better development by forming shoot tips and plantlets than the type 1 PLBs when all PLBs were cultured on medium supplemented with 5 g/l sugar and 150 ml/l coconut water under 80% red plus 20% blue LEDs or 50% red plus 50% white LEDs.

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Thesis Advisor's signature