Abstract No: BO-15 **Biological Sciences**

Study of pollen germination of *Dendrobium* cultivars

W. E. R. Silva, T. H. Kahagalla, S. P. Senanayake* and R. Attanayake

Department of Botany, Faculty of Science,
University of Kelaniya, Sri Lanka
priyangi@kln.ac.lk

Orchidaceae family includes more than 25,000 species, among which *Dendrobium* genus is one of the most numerous with over 1,200 species in the world. Orchid pollen is packaged as pollinia in which the pollen grains are bound together by viscin threads in masses for effective pollination. Palynological studies of *Dendrobium* are more important as orchid pollen cannot be dispersed by wind and carried to the stigma for effective fertilization but is mostly done by insects and human beings (hand pollination). Thus, this study was aimed at comparing the efficiency of *in vitro* pollen germination and natural pollen germination. *In vitro* pollen germination of commercial *Dendrobium* variety 'Thailand tommy'and 'Burania jet green' was evaluated using three liquid media containing sucrose (0, 5%, 10%, 15%, 20%) with 0.01% boric acid medium, BK medium containing sucrose, H_3B0_3 (100 mg/L), $Ca(N0_3)_2$ (300 mg/L), $MgSO_4$ (200 mg/L), and KNO_3 (100 mg/ L) and sucrose solutions. Pollen were collected from newly opened flowers of two *Dendrobium* cultivars, sown on different media and then incubated at room temperature for 24h and examined under a light microscope (10 x 40). Natural pollen germination on stigmatic fluid of *Dendrobium* cultivars was evaluated using hand pollinated *Dendrobium* flowers. The pollinia of *Dendrobium* cultivars were deposited on stigma of newly opened flowers and after 72 hours the small amount of stigmatic fluid was stained with cotton blue in lacto phenol and observed under a light microscope (10 x 40). Pollen tube elongation equal or greater than the diameter of the pollen was considered as germinated pollen. Highest percentage of mean pollen germination was recorded in 0.01% boric acid containing 20% sucrose medium for both 'Thailand tommy' (16%) and 'Burania jet green' (12.50%) while the lowest mean germination was seen in distilled water medium in 'Thailand tommy' (2%) and 'Burania Jet Green' (1.50%) in the *in vitro* pollen germination process. In natural pollen germination process, the percentage of mean pollen germination on stigmatic fluid of *Dendrobium* cultivars was 26.6% and the pollen tube was elongated 5 times than the pollen diameter.

Keywords: *Dendrobium* cultivars, Pollen germination, Pollinia