Plant Extracts as Biostimulants for in vitro Orchid Cultivation and Keiki Development – Phase II

dos Santos, Beatriz Maria (School: Colegio Estadual Jardim Porto Alegre)

Orchids are plants with challenging propagation; therefore, in vitro cultivation is a viable alternative for seedling production, despite its high cost. Additionally, growth is slow, and the first flowering may take between 3 to 10 years. Aiming to reduce time and costs, this project analyzes the use of plant extracts in in vitro cultivation and in the production of keikis of Dendrobium nobile, as well as compares the effectiveness of the alternative DIO medium (a low-cost, easy-to-prepare medium developed at Jardim Porto Alegre State School) with the commercial MS/2 medium in Cattleya walkeriana and Epidendrum cristatum. Extracts were prepared at concentrations of 100, 150, 200, and 250 g/L for plants and 1.0, 1.5, 2.0, and 2.5 g/L for the bulbs. Twenty-one treatments per species were conducted, in addition to MS/2 as a control, and 41 treatments were performed for keiki production. Development was monitored weekly, evaluating germination, keiki formation, and contamination. Statistical analysis was performed using the SISVAR system at a 0.05% significance level, with the Scott–Knott test. Results indicate that plant extracts influenced vegetative development, with positive effects on leaf growth, keiki size and number, and root length, especially in treatments 20 (Portulaca oleracea 200 g/L) and 28 (Kalanchoe blossfeldiana 200 g/L), suggesting a biostimulant effect. Some treatments also reduced pseudobulb oxidation. In in vitro cultivation, the DIO medium supplemented with Portulaca oleracea extract at 150 g/L (T19) favored germination, whereas the control treatments did not show significant results.

Awards Won:
Third Award of $1,200