



IDENTIFICATION OF THE VIABILITY OF *Bipinnula fimbriata* SEEDS

Simón Martín Aguayo¹; Michele Carla Nadal¹

¹Universidad Viña del Mar, Viña del Mar, Valparaíso, Chile

Bipinnula fimbriata is an endemic terrestrial orchid species facing significant threats due to habitat loss, climate change, and human activities, highlighting the need to develop effective strategies for its conservation and that of other orchids. This study aimed to develop a protocol to assess the viability of *B. fimbriata* seeds using tetrazolium salts. The experiment was conducted in November 2024. The flowers were naturally pollinated in situ, and the seeds were collected in the spring of 2023 and 2024, being stored under refrigeration until the tetrazolium test was carried out. A completely randomized design (CRD) was used, with treatments arranged in a 3x3 factorial scheme (three preconditionings and three conditionings), and the experiment was performed in duplicate with seeds collected in 2023 and 2024. The seeds were subjected to combined treatments of preconditioning (control and imbibition in sucrose solution and distilled water) and conditioning in total darkness (control and controlled temperatures of 40°C in oven and bain-marie). Viability was assessed based on embryo staining using a 0.5% tetrazolium solution and observation of the embryos under an upright microscope. The obtained data were statistically analyzed using ANOVA and Tukey's test ($p < 0.05$). The results showed that treatments without imbibition in the preconditioning did not react to tetrazolium salts, whereas treatments with imbibition in the preconditioning and controlled exposure to high temperatures achieved the highest percentages of viability. The treatment with preconditioning in distilled water for 24 hours and conditioning in a 0.5% tetrazolium solution for 24 hours in an oven at 40°C showed the best results. Additionally, a significant decrease in the viability of seeds stored for one year under refrigeration was observed, dropping from 50% to 15% viability. The developed protocol proved to be a rapid tool for assessing the embryonic viability of *B. fimbriata*. Its application could be extended to other species, promoting conservation and management strategies for native orchids in Chile. We conclude that preconditioning in distilled water for 24 hours and conditioning in a 0.5% tetrazolium solution for 24 hours in an oven at 40°C can be recommended for *B. fimbriata*, proving to be an efficient method for assessing the embryonic viability of this species.

Keywords

Plant conservation; Endemics; Tetrazolium test; Orchidaceae.

Acknowledgements

Universidad Viña del Mar (UVM)