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Effect of the medium composition on the asymbiotic germination and *in vitro* development of the *Laeliocattleya* hybrid

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Highlights

- Preconditioning treatment influence *xLaeliocattleya* hybrid seeds viability, tested by tetrazolium staining.
- The immersion in 10% sucrose and distilled water for 10 min improved the detection of viable seeds.
- The best germination percentage was achieved in the culture medium supplemented with pineapple juice (56 ± 2.8).
- The MS medium enriched with pineapple juice proved to be efficient in the seeds germination and development of *xLaeliocattleya*.
- The use of organic supplements in the culture medium could replace synthetic hormones.

Abstract

In vitro cultivation techniques are viable alternatives for the germination and production of orchid seedlings in a short period. From another perspective, when studying the optimal germination conditions, knowing about the seeds viability is essential. Therefore, this research aimed to study the appropriate medium for germination and *in vitro* development of *xLaeliocattleya* Richard Muller. In addition, optimal preconditioning was determined to enhance the tetrazolium test. Initially, the indehiscent capsules were collected in a nursery in Bochalema-Norte de Santander. From them, seeds were obtained for the preconditioning and germination tests. One portion was subjected to different precondition treatments: distilled water, sodium hypochlorite (0.5–1.0%) and sucrose (10%). Afterwards, seeds were rinsed and exposed to different concentrations and exposure periods of tetrazolium. Regarding *in vitro* cultivation, the commercial medium Orchid Seed Sowing Medium, Murashige & Skoog (MS), and the MS supplemented with coconut water (MSC), pineapple juice (MSP) and gibberellic acid (MSGA3) were evaluated. The highest percentage of viability was obtained by subjecting the seeds to preconditioning with 10% sucrose and keeping them for 24 h in a 0.5% tetrazolium solution. With respect to the MS media used, those enriched with organic supplements proved to be superior to the other treatments since the highest results were achieved both in asymbiotic germination (56 ± 2.8%) and in seedlings formation (25.8 ± 0.8) with the MSP medium, followed by the MSC medium. In this way, a viable and low-cost alternative is offered for the commercial propagation of *xLaeliocattleya* Richard Muller.

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FEEDBACK

Keywords

Development; *In vitro* germination; Hybrid; Viability

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