

# Micropropagation, antioxidant and anticancer activity of pineapple orchid: *Dendrobium densiflorum* Lindl

[Bijaya Pant,](#)

[Krishna Chand,](#)

[Mukti Ram Paudel,](#)

[Pusp Raj Joshi,](#)

[Bir Bahadur Thapa,](#)

[So Young Park,](#)

[Sony Shakya,](#)

[Laxmi Sen Thakuri,](#)

[Sabari Rajbahak,](#)

[Anil Kumar Sah,](#)

[Manju Kanu Baniya,](#)

[Prithivi Raj Gurung,](#)

[Lasta Maharjan](#) &

[Pravesh Rajbhandari](#)

## Abstract

Micropropagation was successfully established in the pineapple orchid *Dendrobium densiflorum* for its conservation and future utilization in the anticancer drug discovery. Micropropagation was carried out via seeds culture on the MS medium. Furthermore, antioxidant and anticancer activities were explored through DPPH and MTT assays. For culture initiation, maximum seed germination (84%) was achieved on half-strength MS medium supplemented with 10% coconut water. Full-strength MS medium supplemented with 15% coconut water was found suitable for highest number of shoot formation from protocorms, while a maximum number of roots were developed on micro-shoots grown on the full-strength MS medium supplemented with 1.5 mg/L IBA. The combination of cocopeat, pine bark and sphagnum moss in the ratio of 2:1:1 was the best substrate used in acclimatization stage resulting in 92% survivability of acclimatized plantlets. Extract of wild plant's stems (DDW) at 475.28 µg/mL concentration inhibited the 50% DPPH free radicals. Therefore, DDW at 369.16 and 470.97 µg/mL concentrations inhibited the growth of 50% cervical cancer cells (HeLa) and glioblastoma cells (U251) respectively. This research highlighted the micropropagation of *D. densiflorum* to be utilized in conservation and its potential anticancer drugs to be discovered in future.