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Sea mosses as an alternative solidifying agent for *in vitro* micropropagation of Dendrobium cv. "Big Jumbo White"

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Agar is a commonly added agar is not used as a gelling agent but as a solidifying agent to culture media as solidifying agent. However, agar is an expensive ingredient in the preparation of *in vitro* media and finding alternative sources as solidifying agents would be beneficial to small scale tissue culture production. Sea moss derived from algal species would be a potential source for serving as gelling agent. Therefore, the present study was conducted with the objective of developing a cost-effective *in vitro* medium for micropropagation of Dendrobium cv. "Big Jumbo White" using sea moss as an alternative gelling agent. Seeds of Dendrobium cv. "Big Jumbo White" were cultured using full-strength of Murashige and Skoog (MS) basal medium for 45 days under *in vitro* conditions. The initiated Protocorm Like Bodies (PLBs) were separated and used to assess the effectiveness of agar and sea moss as gelling agent on organogenesis. Media series, supplemented with plant growth regulators (PGRs); BAP (2.0 mg/L) and NAA (0.5 mg/L), sea moss; 4.5g/L (T1), 7.0 g/L (T2), 9.5 g/L (T3), 12.0 g/L (T4), 14.5 g/L T5, and agar as conventional gelling agent [8g/L (T6)]. After 60 days of incubation 1g of PLBs were placed to produce plantlets of Dendrobium cv. "Big Jumbo White", then were transferred to six different MS media. Agar (8g/L) was used as the control. The highest shoot regeneration (12 cm) was observed in the MS medium containing 12g/L of sea moss. The data were analyzed using the ANOVA and there was no significant difference between sea moss (12g/L) gelling agent and agar (8g/L). According to the findings, MS medium containing sea moss as the gelling agent was successful in the regeneration of shoots from seed culturing of Dendrobium cv. "Big White Jumbo". Furthermore, *in vitro* tissue culture media prepared using sea moss compared with agar has shown a 81 % of cost reduction. In conclusion, sea moss can be recommended as a suitable gelling agent for *in vitro* shoot generation of Dendrobium cv. "Big Jumbo White".

Keywords: Alternative gelling agent; Dendrobium cv. "Big Jumbo White"; *In vitro* media, PGRs; Sea moss