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MICROPROPAGATION AND ANTIOXIDANT SCREENING OF *Lycium barbarum* L. (GOJI)

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Thesis submitted in fulfillment
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AUTHOR'S DECLARATION

I declare that the work in this thesis/ dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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ABSTRACTS

Lycium barbarum or known as goji is a type of plant species with potential medicinal values. It derives from Solanaceae family and native to some areas of China. The present study was conducted to apply micropropagation technique on *L. barbarum* for local propagation and to assess the antioxidant activity by DPPH (diphenyl picryhydrazyl) assay. The best explant and corresponding treatment for micropropagation part were determined. In addition, the antioxidant activities of different ages (two to five month old) and plant parts (leaf, stem and root) of *in vitro* seedlings were also identified. Leaves and nodes were used as explants in micropropagation. For *in vitro* regeneration, the optimum combination was found in leaf explant treated with 0.5 mg/L NAA and 0.5 mg/L BAP in MS media. For callus induction, the treatment of 0.3 mg/L 2,4-D and 0.1 mg/L or 0.3 mg/L BAP in MS media were the optimal treatments in leaf explant while 0.1 mg/L BAP with either 0.3 mg/L or 0.5 mg/L 2,4-D in MS media were the optimal treatments in nodal explant. As for somatic embryogenesis, after a series of subculture on MS basal media, the treatment of 1.0 mg/L 2,4-D and 0.1 mg/L BAP in MS media during callus induction phase in leaf explant were identified to be the best combination. Meanwhile, from the DPPH assay, the methanolic extracts from leaf and stem of two month old seedlings were found to have the highest antioxidant activity with the EC_{50} value of 0.08 mg/mL. The results revealed that *L. barbarum* has the potency to be excellently micropropagated and possesses an outstanding activity of antioxidant.

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