Uptake and Accumulation of Aluminium, Copper and Cobalt in Tissue Cultured Melastoma malabathricum Linn. Plantlets

ABSTRACT

Aims: This study was carried out to investigate the metal tolerance levels of Melastoma malabathricum Linn. plantlets. Study Design: The metal tolerance levels of M. malabathricum L. were examined using an in vitro approach. The ability of the plant to survive in tissue culture medium containing aluminium (Al), copper (Cu) and cobalt (Co) were assessed. Place and Duration of Study: The study was carried out in the Plant Culture Laboratory, Biotechnology Research Institute, Universiti Malaysia Sabah (UMS), between September2011 and February 2013.Methodology: M. malabathricum L. plantlets were cultured on half strength MS media supplemented with Al, Cu and Co at concentrations ranging from 0, 0.5, 1.0, 1.5 to 2.0mM. The growth and survival of the plantlets were observed at every 10 days of treatment and the metals accumulation levels in the leaves and roots were analyzed after 30 days of culture. Results: The order of the survival rate for M. Malabathricum L. plantlets subjected to these three metals was demonstrated to be Al > Cu > Co in the highest metal concentration tested. More accumulation of Al was observed in the roots, and Cu was found to be higher than Co in the leaves. Conclusion: Data obtained from this study on the potential uptake and accumulation of toxic metals for M. Malabathricum L. will be used in future for the development of this plant species as a phytoremediator.