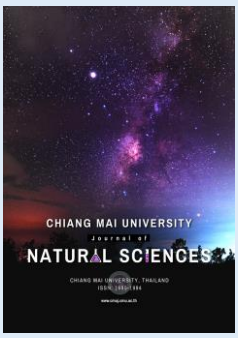

Editor:
Wasu Pathom-aree,
Chiang Mai University, Thailand

Article history:
Received: December 25, 2020;
Revised: February 19, 2021;
Accepted: March 3, 2021;
Published online: March 25, 2021

Corresponding author:
Budsaraporn Ngampanya,
E-mail: ngampanya_b@silpakorn.edu

Research article

Effect of Sucrose on Microtuber Induction and Inulin Accumulation in Jerusalem Artichoke (*Helianthus tuberosus* L.)

Nalinee Homsuwan, Kajorn Mapiyaphun, and Budsaraporn Ngampanya*

Department of Biotechnology, Faculty of Engineering and Industrial Technology, Silpakorn University, Muang, Nakornpathom 73000, Thailand

Abstract The effect of sucrose concentrations and photoperiod applying on microtuber induction and inulin accumulation of Jerusalem artichoke (*Helianthus tuberosus* L.) have conducted under *in vitro* condition. Numbers, lengths and weights of microtubers induced from the single node explants with 0.50 cm above stem node- and stem node- cutting was not significant difference. Concentration of sucrose (51.70, 60, 80, 100 and 108.20 g/l) containing in microtuber induction medium (MST) and photoperiod applying (10.30/13.70, 12/12, 16/8, 20/4 and 21.60/2.40 h light/dark) significant effected to numbers of microtubers ($P \leq 0.05$). The optimized sucrose concentration and photoperiod applying for highest numbers of microtubers was 100 g/l and 20/4 h light/dark, respectively. The significant difference of inulin content ($P \leq 0.05$) in microtuber induced from various conditions was determined. The microtubers induced on MST medium supplemented with 80 g/l sucrose under 16/8 h light/dark accumulated highest inulin content (324.84 ± 40.78 mg/ g dry weight) when compared with others. Data suggested that sucrose and light duration played role in microtuber induction and inulin accumulation of Jerusalem artichoke.

Keywords: Inulin, Jerusalem artichoke, Microtuber, Photoperiod, Sucrose

Funding: The authors are grateful for the research funding provided by Department of Biotechnology, Faculty of Engineering and Industrial Technology, Silpakorn University, Nakornpathom, Thailand.

Citation: Homsuwan, N., Mapiyaphun, K., and Ngampanya, B. 2021. Effect of sucrose on microtuber induction and inulin accumulation in jerusalem artichoke (*Helianthus tuberosus* L.). CMUJ. Nat. Sci. 20(3): e2021063.