

## ABSTRACT

Muhammad Syaiful Anam. 24020121130083. **Effect of Glucose in *Murashige & Skoog* (MS) Media on the Growth and Capsaicin Content of Cayenne Pepper Callus (*Capsicum frutescens* L.)**. Laboratory of Plant Biology and Structure, Department of Biology, Faculty of Science and Mathematics, Diponegoro University, Semarang under the guidance of Yulita Nurchayati and Nintya Setiari.

The current capsaicin compound is obtained from conventional extraction methods that require a lot of chili fruit biomass and a relatively long time to obtain it. Callus culture is one of the alternative methods that can be used for biomass propagation and capsaicin production. Callus growth and capsaicin production can be affected by the use of glucose in the media. The purpose of this study is to determine the effect of differences glucose concentration in MS media on the growth and production of capsaicin callus of cayenne pepper. The method used was callus culture from hypocotyl explants of 14-day-old cayenne pepper sprouts, grown in *Murashige & Skoog* (MS) media with ZPT 2.4-D 2 ppm and kinetin 0.5 ppm. The carbon sources used as treatment were sucrose 30g/L (control), glucose 30g/L, 40g/L, and 50g/L with 5 replicates. The parameters used were the time of initiation, color, texture, wet weight, dry weight of callus and capsaicin content. This study used a Complete Random Design (RAL) with one factor, namely the concentration of glucose in the media. Quantitative data analysis uses ANOVA and DMRT for further analysis. The results showed that the use of glucose in MS media decreased the growth of cayenne pepper calluses, but it could increase the capsaicin content per unit of biomass when compared to sucrose. The optimal concentration for cayenne pepper callus growth is 30g/L sucrose, followed by 30g/L glucose. The highest production of capsaicin through callus culture is obtained from the treatment of concentration 50g/L glucose, while sucrose 30g/L is the optimal treatment for biomass production. The results of this research can be used for the next stage of research in the development of industrial-scale capsaicin production through tissue culture.

Keywords: callus culture, hypocotyl, *Capsicum frutescens* L., carbon source, secondary metabolites