

## Abstract

*Mortierella* sp. BCC 2863 is a fungi that has widely known as polyunsaturated fatty acid (PUFAs) producer especially arachidonic acid or ARA. This study has been focused on optimum condition for growth and ARA production, which consists of inoculum preparation, pH, temperature, and medium composition especially glucose concentration.

Inoculum preparation has been done by growing fungi on agar, cut the culture grown agar of  $1 \times 1 \text{ cm}^2$  and put it in the reference medium for 2 days growth before blended it and used as starter. The suitable pH and temperature was 7 and  $25^\circ\text{C}$ . Yeast Extract was also found to be the suitable nitrogen source used throughout this study.

Initial glucose concentration of 60 g/L was the most suitable concentration for growth and ARA production. In shake flask, it gave biomass and ARA concentrations of 23.71 and 3.59 g/L in shake flask, and gave 19.58 and 2.77 g/L in 5L fermenter, respectively. It has been found that ARA production could be induced by growing in nitrogen limited condition.

On the other way, palm oil, the oil that contains the fatty acid precursors for ARA production, was found to be an alternative source of carbon, in shake flask, it could give biomass and ARA concentration of 10.22 and 0.81 g/L, respectively, with 0.83 mg/g.hr of specific productivity.

Key words: *Mortierella* sp. BCC2863, Arachidonic acid (ARA)