

Wariya Srisa-ard 2010: Production of Arachidonic Acid from A Filamentous Fungus, *Mortierella* sp.. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Mr. Wichien Yongmanitchai, Ph.D. 141 pages.

A total of 151 filamentous *Mortierella* sp. were isolated from 26 soil samples collected from 5 locations in northern region of Thailand as an alternative source of arachidonic acid (ARA) production. Results from primary screening showed that among the isolates obtained, 56 strains accumulated ARA > 25% of total fatty acid. Secondary screening revealed that the strain WA-1 exhibited the highest growth and ARA production at 26.9%. Optimization of culture condition and major medium composition (carbon and nitrogen sources) in flask condition showed that the suitable culture conditions were temperature at 25°C, initial pH at 5.0, high aeration rate and 9–10 days culture time. Investigation on medium composition showed that 6% glucose and 0.3% (NH₄)₂SO₄ together with 0.84 % soy isolate, 0.4% K₂HPO₄·3H₂O, 0.005% CaCl₂·2H₂O and 0.05% MgSO₄·7H₂O (C:N ratio 17:1) were optimal for this organism. Under these conditions, *Mortierella* sp. WA-1 produced cell mass over 50 g/L and ARA content was approximately 45% of total fatty acid. Morphological characteristics indicate that the isolate WA-1 was closest to *Mortierella alpina*.

Student's signature

Thesis Advisor's signature