

Chayut Kharuram 2014: Production of Pigments and Anti-cholesterol Agent by *Monascus* sp. on Cassava Solid Culture. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Professor Busaba Yongsmith, Dr.Eng. 145 pages.

Developing the natural red pigments and anti-cholesterol agent production using low cost cassava solid culture of *Monascus* sp. (MON KUM) was investigated. Selection of *Monascus* mold on cassava chips solid-culture was preliminary carried out. We found that a red mutant strain, KB 10M16, gave better growth, pigmentation and anti-cholesterol production than its wild type strain did. Cassava cubes were also found better substrate for this *Monascus* fermentation than the cassava pulp and mashed cassava. Soaking the cassava cubes of $0.5 \times 0.5 \times 0.5 \text{ cm}^3$ in excess water to obtain 50-55% initial moisture content prior sterilization was found more practical than water addition to the sterilized cassava cubes. Monosodium glutamate was found the best nitrogen source for pigment and anti-cholesterol production amongst the other nitrogen sources (organic sources: urea, soybean, yeast extract, beef extract, malt extract and peptone, inorganic sources: $\text{CH}_3\text{COONH}_4$, $(\text{NH}_4)_2\text{NO}_3$, NH_4NO_3 , NaNO_3 , NH_4Cl and $\text{C}_6\text{H}_{17}\text{N}_3\text{O}_7$) while $\text{CH}_3\text{COONH}_4$ showed inhibition on *Monascus* growth, pigments and anti-cholesterol agent production. Under the optimization of fermentation conditions with 2 % (v/w) spore suspension inoculum, the maximum yields of orange red pigments and anti-cholesterol agents reached 1,411 U/gdw (A_{420}), 943 U/gdw (A_{500}) and 11,271 ppm, respectively. It was noteworthy that the scaling-up of 10 kg of cassava cubes solid culture in the koji chamber gave almost similar results but in a shorter time by using rice inoculum at 10 % (w/w).

Student's signature

Thesis Advisor's signature