

Study on Mycelium Growth and Bioactive Ingredient from *Cordyceps militaris* by Shaken and Static Culture

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ABSTRACT

ABSTRACT *Cordyceps militaris* is one of the famous Chinese medicinal entomopathogenic fungi, it was belong to the genus *cordyceps*, the family ascomycetes, the class Clavicipitaceae. The medical compositions and their medical effects were found as good as the Dong Chong Xia Cao. The aim of this study was to understand the nutrient factor and cultivation method on the production of functional ingredients such as polysaccharide, cordycepin and adenosine. On the cell growth when sucrose as carbon source, YE as nitrogen source, initial pH 4, or adding soy oil have the better cell growth. On the production the intracellular cordycepin when sucrose as carbon source, (NH)₄HPO₄ as nitrogen source, or initial pH 6 have better cordycepin production. On the production of extracellular components, the cotton plug had better cell concentration with the concentration of 17.49 g/L. The cultivation condition using shaking flask culture with cotton plug followed static cultivation. The highest cordycepin production was found at day 30 with the concentration of 1103 mg/L. On the other hand the highest adenosine and polysaccharide production were using shaking flask culture with plastic plug with followed static cultivation and the concentration were 114 mg/L and 1.03 g/L, respectively. With the various pH of media the highest cordycepin production (315.64 mg/L), polysaccharides production(1.05 g/L), and adenosine production (109.73 mg/L) were found in pH4, pH5, and pH7, respectively. The optimal medium to produce cordycepin of *Cordyceps militaris* by using Box – Behnken design. The factors studied include YE, pH, day of culture shaking, and day of culture static. The results shown that the optimal medium of submerged culture fermentation included pH 5, 2.82% YE, tent of 2.82, 6.29 days shaking, and 41.76 days static culture. Since the static time was too long, the other approach to ignore the interaction effect was using pH 6, 4.5%YE, 8 days shaking culture, and 10 days static culture and the subsequent result of the optimum cordycepin production was as high as 1435.79 mg/L. Key word: *Cordyceps militaris*、cordycepin、adenosine、polysaccharide

Keywords : *Cordyceps militaris* ; cordycepin ; adenosine ; polysaccharide

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