Effects of Cultural Conditions on Mycelial Biomass and Bioactive Ingredients by Ophiocordyceps sinensis Submerged ...

張雅雯、徐泰浩, 林芳儀

E-mail: 382076@mail.dyu.edu.tw

ABSTRACT

The medicinal fungus Ophiocordyceps sinensis, syn. Cordyceps sinensis and syn. Hirsutella sinensis＊1, originated from the famous traditional Chinese medicine DongChongXiaChao, which psychrophilic property (below 21℃) and grey to black colony provided significant difference from Cordyceps spp. and other confused C. sinensis (culture at 23-25℃) publications. Although much of C. sinensis related papers have published, however, little information to the submerged fermentation, the contents of bioactive ingredients and anti-oxidation activity of the psychrophilic O. sinensis H101, which previous has been assign as H. sinensis H101, the anamorph of C. sinensis. The objectives of this study were to investigate the effects of carbon sources and the nitrogen sources in medium and cultural conditions on mycelia biomass, the contents of bioactive ingredients intracellular polysaccharides (IPS), extracellular polysaccharides (EPS), adenosine, cordycepin, ergosterol and total polyphenols in mycelial biomass and fermentative broth. In addition, the anti-oxidation activity of the extracts of mycelial biomass and fermentative broth and the contents of β-glucan in IPS and EPS were determined. Results showed that the excellent anti-oxidation activity exhibited in mycelia and fermentative broth by the experiment of ferrous chelating capability. Higher content of total polyphenols has been found in fermentative broth of O. sinensis H101. In conclusion, the optimal cultural medium including the kinds and concentrations of carbon and nitrogen source and initial pH in medium and cultural conditions (temperature, rotation rate and cultural period) have been determined by O. sinensis H101 strain. Several bioactive ingredients existed in mycelium and fermentative broth, especially high anti-oxidation activity in fermentative broth resulted from EPS and total polyphenols.

Keywords : Ophiocordyceps sinensis、Cordyceps sinensis、Hirsutella sinensis、submerged fermentation、bioactive ingredients、anti-oxidation

Table of Contents

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