Effects of Medium Composition and Cultural Condition on the Bioactive Index Ingredients by Cordyceps militaris Fermentat

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ABSTRACT

Pupa-Cordyceps is a famous traditional Chinese medicine, also known as “ North Cordyceps ” in folk in Chinese. It originates from infected larva or pupa with fruiting body by fungus Cordyceps militaris. It's a lot of worked, include anti-tumor, anti-inflammation, antioxidation, immunity adjustment, decreased blood fat and decreased blood sugar. This study investigated the production of mycelium biomass and contents of the bioactive index ingredients and exopolysaccharide in different carbon source medium and culture temperature, and demonstrated the relationship between the formation of pellet and production of bioactive index ingredients by C.militaris. In shaken culture and 5 L fermentor experiments in different carbon source culture, the maximum of mycelium biomass (18.62 mg/mL,2.22 mg/mL) and exopolysaccharide (1.30 mg/mL,1.26 mg/mL) and ergosterol (8.32 μg/mL,16.61 μg/mL) was obtained from sucrose as carbon source in medium, the maximum of adenosine (14.55 μg/mL,4.49 μg/mL) and cordycepin was (24.41 μg/mL,21.84 μg/mL) obtained from glucose as carbon source in medium. In shaken culture and 5 L fermentor experiments in 19°C,22°C and 25°C three different culture temperature by C.militaris, from 22°C as culture temperature of cultural condition, the maximum of mycelium biomass (17.56 mg/mL,2.13 mg/mL),exopolysaccharide (1.25 mg/mL,1.28 mg/mL),adenosine (14.41 μg/mL,4.48 μg/mL),cordycepin (24.59 μg/mL,21.88 μg/mL) and ergosterol (7.51 μg/mL,14.93 μg/mL). From sucrose as carbon source in medium and 22°C as culture temperature of cultural condition, It's advantageous in the production increase of mycelium biomass and exopolysaccharide, Moreover in the fermentation solubles reducing sugar content to consume nearly completely, thus it may be known, uses best to three kind of sugars for the from sucrose as carbon source by C.militaris. The comprehensive bioactive index ingredients production result, showed from glucose as carbon source in medium and 22°C as culture temperature of cultural condition, It's advantageous in the delivers of bioactive index ingredients. The adenosine may as the cordycepin synthesis of precursor, when in the medium adenosine content is higher, C.militaris of production the cordycepin metabolism is higher, therefore suitable medium carbon source and culture temperature to C.militaris bioactive index ingredients play the important role.

Keywords : Cordyceps militaris、fermentation、polysaccharide、adenosine、cordycepin、ergosterol

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