Effects of Carbon Sources on Bioactive Ingredients and Pellets Morphology in Submerged Fermentation by Cordyceps militar

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ABSTRACT

Pupa-Cordyceps is a famous traditional Chinese medicine, also known as “ North Cordyceps ” in folk in Chinese. It ’ s a lot of worked, include anti-inflammation, anti- tumor, antioxidation and decreased blood sugar.This study investigated to cultured Cordyceps militaris in three different carbon source, glucose, sucrose and lactose. In the 5 L ferment experiment during 14 days, the investigated production of mycelial biomass, culture models, polysaccharides and bioactive ingredients. The mycelial morophology was quantified and characterized by means of image analysis, which included average diameter, circularity and roughness of the pellets. As compared with demonstranted the relationship between the polysaccharides and formation of pellet. In ferment culture, the maximum of cordcepin and extracellular polysaccharide was obtained form lactose as carbon source in medium, and the maximum of value was 0.52 g/L,1.35 mg/g. Other ferment culture, the maximum of adenosine and inter-cellular polysaccharide was obtained form sucrose as carbon source in medium, and the maximum of value was 471 mg/L,1.137 mg/g. Overview the used sucrose as carbon source in medium was great than lactose. In the different carbon source concentration, the maximum of biomass and extracellular polysaccharide was obtained form 6 % sucrose as carbon source in medium, and the maximum of value was 27.29 g/L,1.34 g/L. And the other ferment culture, the maximum of biomass and extracellular polysaccharide was obtained form 6 % sucrose as carbon source in medium, and the maximum of value was 4.64 g/L,1.09 g/L.When glucose was used, the maximum average diameter and roughness of pellets was obtained, it ’ s was 4.53 mm and 6.21. The majority of the mycelial morphology were fluffy . When lactose was used, the maximum circularity was obtained, it ’ s was 0.88. The majority of the mycelial morphology were fluffy too. At last used glucose to cultured, the majority of the mycelial morphology was fluffy.

Keywords : Cordyceps militaris ; Fermentation ; Polysaccharides ; Morophology, image analysis

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