Effect of medium and cultural condition in submerged fermentation on mycelium biomass and extraceullar polysaccharide pr

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ABSTRACT

Wolfiporia cocos is a medicinal fungi, its sclerotium has been long been used as traditional Chinese herb with diuretic, sedative and tonic.Pharmacology studies have proven that its avtive ingredients possess anti-inflammatory, anti-aging, immunity, anti-tumor, sedative, diuretic and anti-emetic properties. Triterpenes and pachymaran have been reported as major biochemical activities. Mycelium is cultured through fermentation and used in health food products to develop product into commercial quantities. Fermentation culture using the chemically defined media culture followed. The process not only prevented interference during the effective ingredient extraction, but also further controlled the Wolfiporia cocos growth within the condition required for the effective ingredients. Then chemically defined media was added to Wolfiporia cocos and cultured in 25°Ccontrolled temperature oscillator to evaluate the effects of the initial pH, different carbon-nitrogen ratio, glucose concentration, nitrogen concentration and inoculation dosage of the culture medium on the mycelium biomass , reducing sugar and the mycelium extracellular polysaccharide composition, and analyzed the crude protein, crude fat, total sugar ,ash and water content of mycelia and sclerotium. Findings showed that initial pH was 3.0；carbon-nitrogen ratio was 30:1；glucose concentration was 5.0%； and the mycelium biomass content of the nitrogen concentration was 1% fermented culture mycelium biomass was higer. And extracellular polysaccharid and showed that initial pH was 3.0; carbon-nitrogen ratio was 30:1; glucose concentration was 5.0%; and the mycelium biomass content of the nitrogen concentration was 1% fermented culture was higer. A 5L fermentation tank was used to stuffy the physicochemical factor including the different temperature, different stirring speed, changes of the mycelium biomass, reducing sugar, pH in supernatant and extraceullar polysaccharide under 168-hours fermentation process. Finding showed that maximum mycelium biomass was achieved under 30°Cand 200 rpm stirring speed. Extracellular polysaccharide was achieved under a 30°C, 200 rpm stirring speed.

Keywords : medicinal fungi ; Wolfiporia cocos ; submerged culture ; mycelium ; extracellular polysaccharide

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