URN etd-0407109-183708-591
Author Kung Chin KUO
Author's Email Address No Public.
Statistics This thesis had been viewed 49 times. Download 24 times.
Department
Year 2005
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Studies on Coenzyme Q10 production by Rhodobacter sphaeroides
Date of Defense 0000-00-00
Page Count 146

Keyword
COQ10
UBIQUINONE
UBIDECARENONE
COENZYME Q10

Abstract
Coenzyme Q10 (CoQ10) is a component of the respiratory chain with antioxidant property and it has been proposed as an agent for treating heart disease , hypertension and strengthening the immune system in recent years. It is good for patients with allergy, asthma, or other respiratory diseases. Besides, it can be clinically used to manage chronic schizophrenia, Alzheimer's disease and Parkinson's disease. According to the previous studies in Japan, CoQ10 can protect the mucosa of the stomach and the duodenum and that it maybe helpful to treat peptic ulcer diseases. It also can strengthen our immune system that is more powerful than Vitamin E for forty times. CoQ10 really attracts many people's attention recently.

Rhodobacter sphaeroides is a species of photosynthetic bacteria (PSB) that has the ability to produce CoQ10. In this study, we used different sources with different proportion of carbon and nitrogen and created different growth conditions for this photosynthetic bacterium to produce CoQ10. Our study result showed that; in an experiment of shaking bottle, the production rate of CoQ10 was highest (9.46 mg/L) in the glucose-based carbon source and 15g/L of single nitrogen-yeast extract (weight ratio=1:6). The production rate of CoQ10 was second (7.53 mg/L) in the 20g/L of peptone(weight ratio =1:8). In complex nitrogen sources, addition of inorganic ammonium sulfate was helpful to increase the production rate of CoQ10. We found that the production rate of CoQ10 increased more when we added inorganic ammonium sulfate into the solution of 20g/L of peptone(weight ratio =1:8) and its productive vales was 7.84 mg/L.

In a 10L fermented tank with the solution of 20g/L of peptone(weight ratio =1:8), high-concentration of ammonium sulfate was helpful for producing CoQ10 and its productive rate may be more than 10mg/L. The result meant that it can reach the economic benefits of large-scale production.
Advisory Committee Chee-Jen CHEN - advisor

Files etd-0407109-183708-591-001.pdf

indicate access worldwide
Date of Submission 2006-07-10