

# Increasing CoQ<sub>10</sub> Production by *Rhodopseudomonas palustris* J001 Using a Two-Stage Fermentation Process

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CoQ<sub>10</sub> is used not only as a medicine but also as a food supplement due to its various physiological activities. The production of CoQ<sub>10</sub> by microbes is a successful approach for generating large amounts of this natural product. The effects of dissolved oxygen (DO) contents and the two-stage fermentation process on cell growth and CoQ<sub>10</sub> production by *Rhodopseudomonas palustris* J001 were investigated. The optimal DO contents for cell growth and CoQ<sub>10</sub> production were 45% and 15%, respectively. A two-stage fermentation process, which consists of a 1<sup>st</sup> stage with 45% DO, a 2<sup>nd</sup> stage with 15% DO and a synchronous feeding of 2.0% NaAc at the switching time (42 h after inoculation), has proven to be the optimum fermentation process for the production of CoQ<sub>10</sub>. The maximum biomass, CoQ<sub>10</sub> production and CoQ<sub>10</sub> production rate were 1.31 g l<sup>-1</sup>, 89.1 mg l<sup>-1</sup>, and 1.142 mg l<sup>-1</sup> h<sup>-1</sup>, respectively, increased by 28%, 585% and 426% as compared to the one-stage batch production with 45% DO. The DO level was the major factor to increase the CoQ<sub>10</sub> production by the two-stage process.

**Key words:** CoQ<sub>10</sub>, *Rhodopseudomonas palustris*, Two-Stage Process, Dissolved Oxygen