

## Autolysis of intracellular polyhydroxybutyrate granules in *Escherichia coli*

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Despite of much attention as a biodegradable substitute for conventional nonbiodegradable plastics, the commercial use of polyhydroxybutyrate (PHB) remains limited because of its high production cost. In order to reduce the recovery/purification cost which forms over half of the total production cost, we developed a new cultivation method enabling autolysis of PHB by the modulation of initial inoculum size and the medium composition in the recombinant *Escherichia coli* harboring *Alcaligenes eutrophus phbCAB* genes. In the flask cultivation using low cell inoculum and 2X LB medium containing 21% of glucose, autolysis of 80.2%, as well as yields of 85.2 g/L of PHB and PHB content of 99.0% (w/w), were obtained. The glucose conversion rate was 0.43. The strategies developed in this study can minimize the complex and unfavorable efforts requiring for the efficient recovery/purification processes, thereby allow biodegradable plastic produced by the recombinant *E. coli* to compete with conventional nonbiodegradable plastic.

### References

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