

Developing an effective approach for microbial biosynthesis of hydroxyhydroquinone

Abstract

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Hydroxyhydroquinone (HHQ) is an aromatic triol with important biological activities and values. In this work, we achieved de novo HHQ bioproduction using glucose as the substrate. First, we established a cultivation method to address the issue of HHQ degradation in an aqueous solution. Second, an artificial biosynthesis pathway was constituted in *E. coli* to enable the conversion of glucose to HHQ via 4-hydroxybenzoate. Moreover, microbial co-culture engineering techniques were utilized to modularize the biosynthesis pathway and improve the HHQ production to 64 mg/L within 48 h. To our knowledge, this is the first report of heterologous biosynthesis of HHQ using a microbial host. The findings of this work lay a solid foundation for future efforts in microbial bioproduction of HHQ and related biochemicals.