

High throughput detection method of Quorum Sensing molecule by colorimetric assay and its applications

Yung-Hun Yang¹⁾, Tek-Hyung Lee¹⁾, June Hyung Kim¹⁾, Eun Jung Kim¹⁾,
Hwang-Soo Joo¹⁾, Chang-Soo Lee²⁾, AND Byung-Gee Kim¹⁾

¹⁾School of Chemical and Biological Engineering and Institute of Molecular Biology and Genetics, Seoul National University, Kwanak-Gu, 151-742, Korea and ²⁾Department of Chemical Engineering, ChungNam National University, Dae-Jeon, Korea

Abstract

Quorum sensing (QS) molecules and QS quenching enzymes in bacteria has been one of the main topics of study recently. Despite many interests on QS, there were not easy ways to detect QS molecules and lactonase activity. Here, we report a simple and rapid method for the successful introduction of colorimetric assay method with nano-molar detection limit, which has low detection limit at nmol and can be realized by common chemicals and small quantity of lactone compounds. This method could be used for the quantitation of QS molecules, monitoring of hydrolysis by pH and assay of enzyme activity in a few minutes, and the results were quite comparable with HPLC. As a simple application, using this method, human liquids, saliva and blood, were simply examined and found to have some activities on QS molecule hydrolyzing activity.