DESIGN, SYNTHESIS AND ACTIVITY EVALUATION OF NOVEL HOMOSERINE LACTONES DERIVATIVES WITH PHENYLUREA GROUPS AS BACTERIAL QUORUM SENSING INHIBITORS

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We design, synthesis and activity evaluation of novel homoserine lactones derivatives with phenylurea groups as bacterial quorum sensing inhibitors.

We designed and synthesized a series of novel quorum sensing inhibitors 2a~i. Through *chromobacterium* CV026 instruction strains and *Pseudomonas aeruginosa las* system quorum sensing detection model, extracellular virulence factors (pyocyanin, elastase, rhamnolipid), swarming motility and biofilm formation regulated by QS system of PAO1 compared with brominated furanone C-30. And we used Autodock molecular simulation software to simulate the combination of the active compounds to the receptor protein LasR.

AHLs linked different phenylurea groups expressed more outstanding anti-QS activity than brominated furanone C-30. Compound 2f significantly reduced extracellular virulence factors (pyocyanin, elastase, rhamnolipid), swarming motility and biofilm formation regulated by QS system of PAO1 in a lower concentration and formed two hydrogen bonds by interacting with Arg-61 to exert more outstanding anti-QS activity than C-30. So, Arg-61 is very important in QSI than other amino acid residues.

It is possible that this work could be a precursor compound for further study of novel QSIs based on structural modification and introduce new methods for developing anti-QS active products.

Keywords: QSI, PHENYLUREA, BACTERIOSTATS, AHLS