

Functional analysis and overexpression of the iterative typeI polyketide synthases, orsellinic acid synthase and neocarzinostatin naphthoate synthase, in *Streptomyces coelicolor* YU105

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Abstract

Orsellinic acid synthase (AviM) and neocarzinostatin naphthoate synthase (NNS), involved in the biosynthesis of orsellinic acid (OA) and 2,7-dihydroxy-5-methyl-1-naphthoic acid (DMNA), are iterative typeI polyketide synthases (PKS). The most well known iterative typeI PKS is the methylsalicylic acid synthase found from fungi. This type of PKS is multifunctional and accepts a starter and several extending units repeatedly but the usual typeI PKS has modular domains and the connection of the building units is accompanied only by the existence of modules. We have interested in the function of the typeI iterative PKS and studied with the two PKSs AviM and NNS. The two genes encoding AviM and NNS were cloned into a *Streptomyces-E. coli* shuttle vector containing an *ermE** promotor and expressed in *S. coelicolor* YU105 respectively. The transformants carrying each of the expression vectors produced OA and DMNA as major metabolites. The ketosynthase (KS) domain of the each of the PKSs was separated from each of the intact enzyme by gene manipulation and now we are trying to swap the KS domains.

Reference

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