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Effects of *S*-adenosylmethionine on production of secondary metabolites in *Streptomyces diastatochromogenes* 1628

Key words：***Streptomyces diastatochromogenes* 1628; SAM; MetK; Toyocamycin; Tetraene macrolides**

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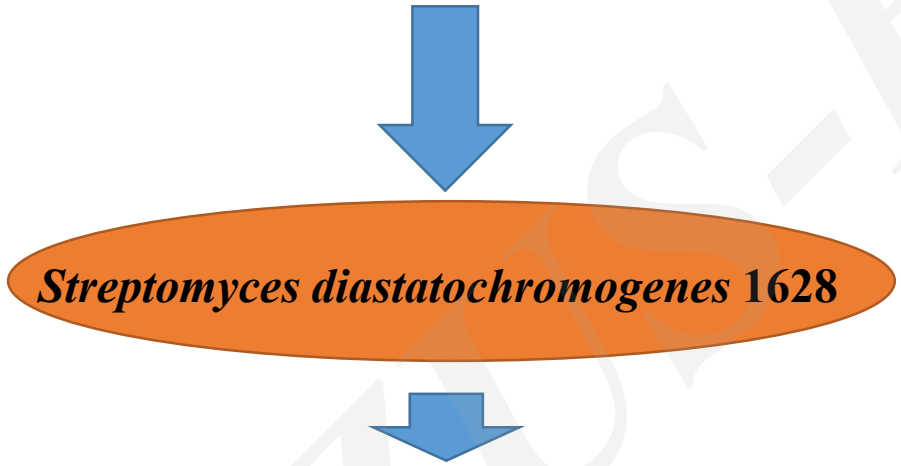
Research Plan

Addition of exogenous SAM ***OR*** **Overexpression/Disruption/complementation of *metK*$_{sd}$ gene**



Analysis of tetraene macrolides and TM

Analysis of gene transcriptional levels by qRT-PCR and Determine of dry cell weight

Decrease, no change, increase?

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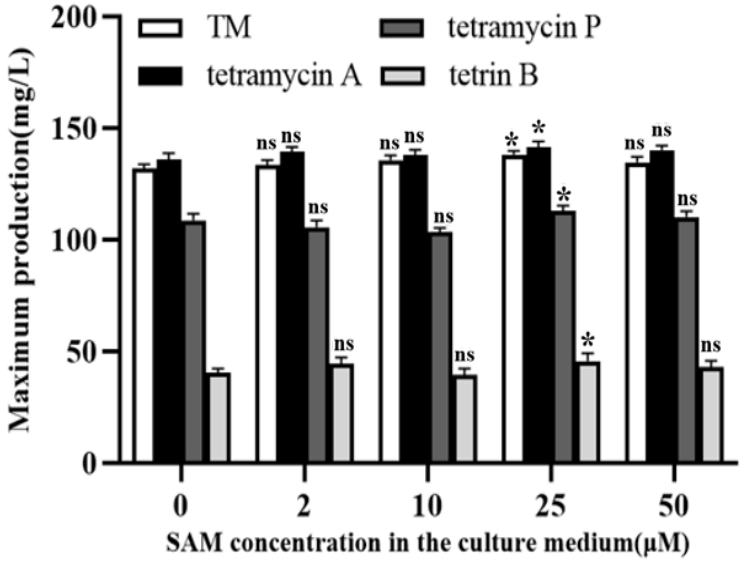
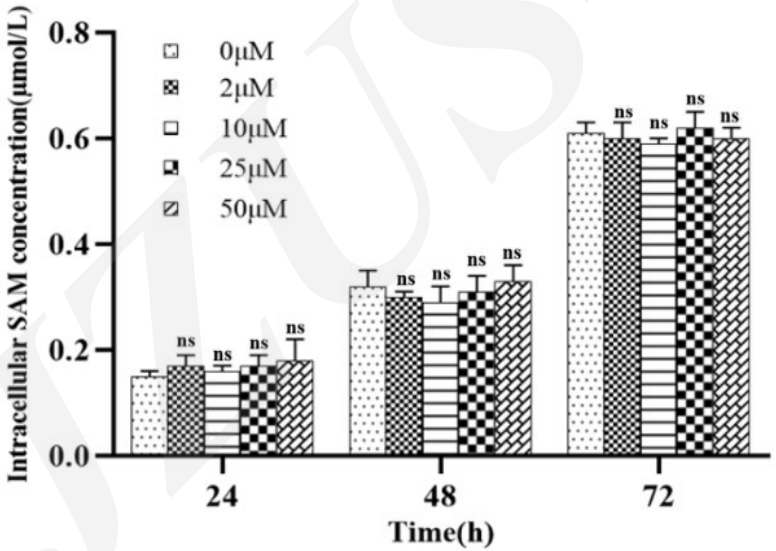
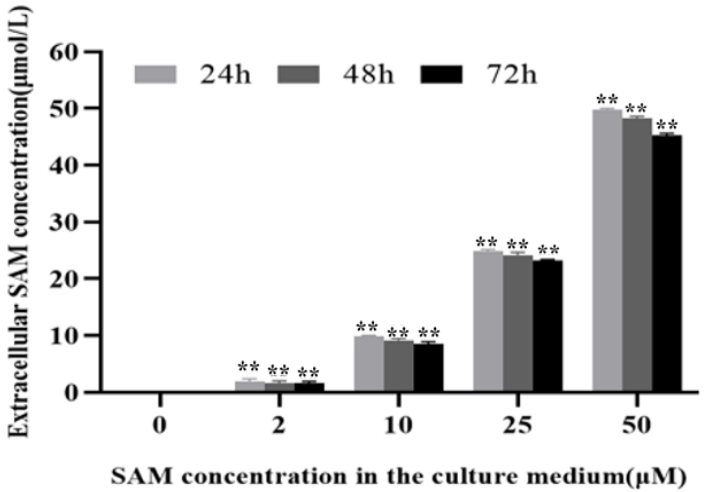
Results

✓**The addition of exogenous SAM with different concentrations had no effect on the production of secondary metabolites in *S. diastatochromogenes* 1628.**







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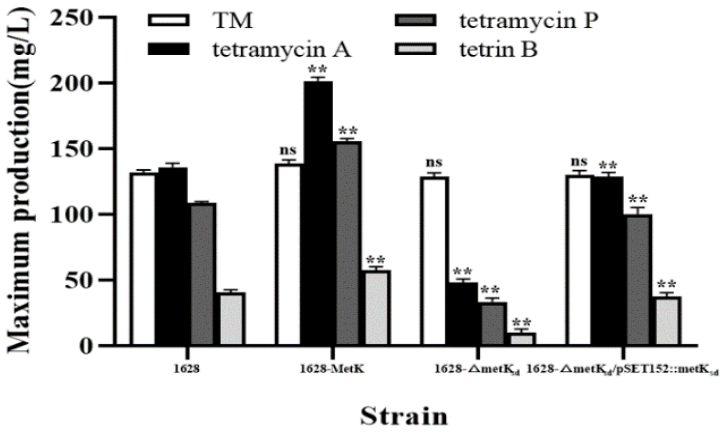
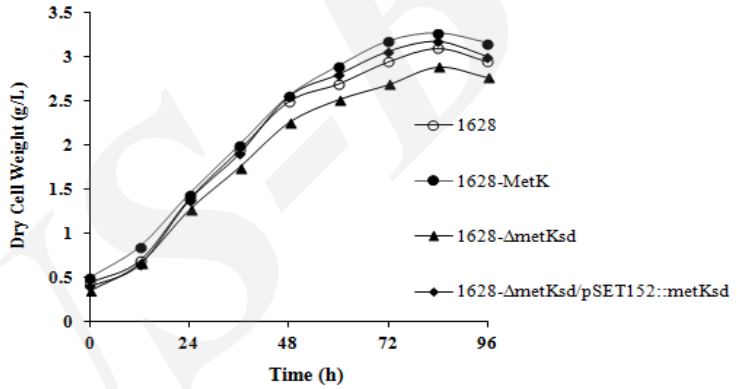
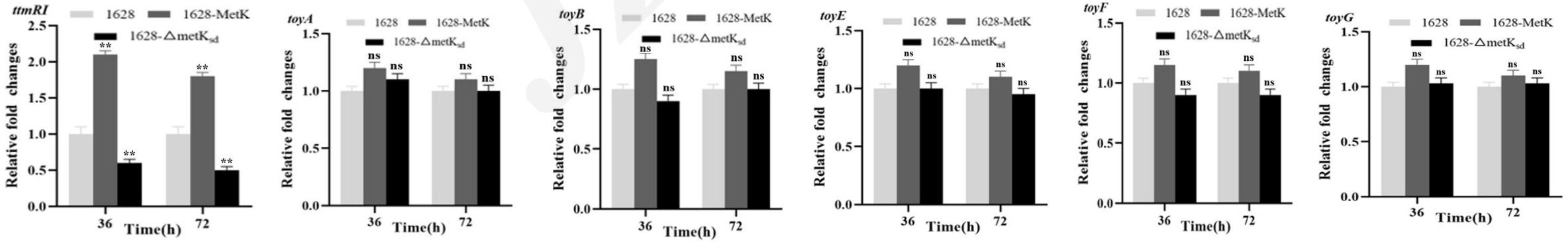
Results

✓**Overexpression of *metK*$_{sd}$ gene in *S. diastatochromogenes* 1628 leads to increased SAM and promote the production of three tetraene macrolides, but that it has no effect on the TM production.**





✓**The SAM increased the transcriptional level of *ttm*RI involved in tetraene macrolides and had no obvious effect on the transcriptional levels of *toy* genes involved in toyocamycin biosynthesis**



Innovation points

❁ **The overexpression of *metK*$_{sd}$ gene elevated sharply the specific activity of SAM synthetase and intracellular SAM level, and further significantly promoted the production of three tetraene macrolides in *S. diastatochromogenes* 1628, but it has no effect on the TM production.**

❁ **Overexpression of *metK*$_{sd}$ gene enhances the transcriptional level of *ttmR*I gene, and further improves tetramycin A and tetramycin P production in over-expression recombinant strains.**

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