

# Stereospecificity of Enoylreductase Domains from Modular Polyketide Synthases

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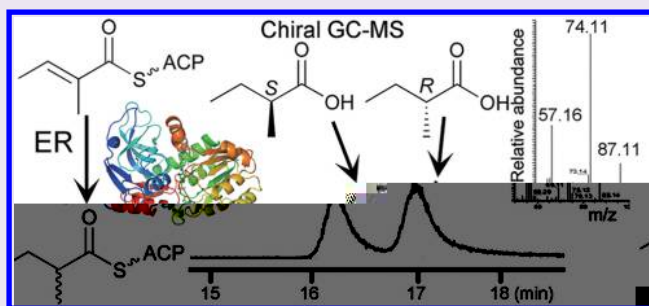
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**S** Supporting Information

**ABSTRACT:**

Enoylreductase (ER) domains from modular polyketide synthases (PKSs) are responsible for the stereospecific reduction of enoyl-acyl carrier protein (ACP) intermediates to saturated acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site. In this study, we investigated the stereospecificity of ER domains from modular PKSs. We identified two ER domains, ER1 and ER2, which are responsible for the stereospecific reduction of enoyl-ACP intermediates. ER1 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2R)-acyl-ACP intermediates, while ER2 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2S)-acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site. We identified two ER domains, ER1 and ER2, which are responsible for the stereospecific reduction of enoyl-ACP intermediates. ER1 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2R)-acyl-ACP intermediates, while ER2 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2S)-acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site.



Enoylreductase (ER) domains from modular polyketide synthases (PKSs) are responsible for the stereospecific reduction of enoyl-acyl carrier protein (ACP) intermediates to saturated acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site. In this study, we investigated the stereospecificity of ER domains from modular PKSs. We identified two ER domains, ER1 and ER2, which are responsible for the stereospecific reduction of enoyl-ACP intermediates. ER1 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2R)-acyl-ACP intermediates, while ER2 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2S)-acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site. We identified two ER domains, ER1 and ER2, which are responsible for the stereospecific reduction of enoyl-ACP intermediates. ER1 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2R)-acyl-ACP intermediates, while ER2 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2S)-acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site.

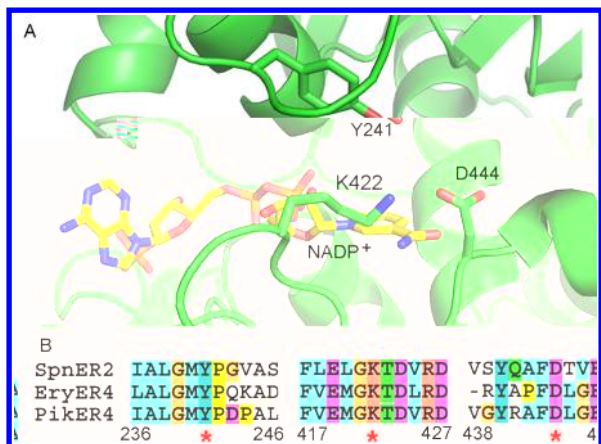
(2R)-2-acyl-3-acyl-acyl-ACP intermediates.<sup>5,6</sup> In vivo, the stereospecificity of ER domains is determined by the structure of the active site. We identified two ER domains, ER1 and ER2, which are responsible for the stereospecific reduction of enoyl-ACP intermediates. ER1 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2R)-acyl-ACP intermediates, while ER2 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2S)-acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site. We identified two ER domains, ER1 and ER2, which are responsible for the stereospecific reduction of enoyl-ACP intermediates. ER1 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2R)-acyl-ACP intermediates, while ER2 is responsible for the stereospecific reduction of enoyl-ACP intermediates to (2S)-acyl-ACP intermediates. The stereospecificity of ER domains is determined by the structure of the active site.

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**Figure 4.** (A) 3D ribbon diagram of the SpnER2 protein structure in green, showing the binding site for NADP+ (yellow sticks) and residues Y241, K422, and D444. (B) Sequence alignment of SpnER2, EryER4, and PikER4. Residue positions 236, 246, 417, 427, and 438 are marked with asterisks.

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**METHODS**

**ASSOCIATED CONTENT**

**Supporting Information**

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**Notes**

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