

## 1 Nomenclature

### EC number

1.3.99.24

### Systematic name

(2S)-2-amino-4-deoxychorismate:FMN oxidoreductase

### Recommended name

2-amino-4-deoxychorismate dehydrogenase

### Synonyms

ADIC dehydrogenase <1> [1]

SgcG <1> [1]

## 2 Source Organism

<1> *Streptomyces globisporus* [1]

## 3 Reaction and Specificity

### Catalyzed reaction

(2S)-2-amino-4-deoxychorismate + FMN = 3-(1-carboxyvinyloxy)anthranilate + FMNH<sub>2</sub>

### Natural substrates and products

**S** 2-amino-2-deoxyisochorismate + FMN <1> (<1> the sequential action of 2-amino-4-deoxychorismate synthase (EC 2.6.1.86) and EC 1.3.99.24 leads to the formation of the benzoxazolate moiety of the enediyne antitumour antibiotic C-1027 [1]) (Reversibility: ?) [1]

**P** 3-enolpyruvoylanthranilate + FMNH<sub>2</sub>

### Substrates and products

**S** 2-amino-2-deoxyisochorismate + FMN <1> (<1> the sequential action of 2-amino-4-deoxychorismate synthase (EC 2.6.1.86) and EC 1.3.99.24 leads to the formation of the benzoxazolate moiety of the enediyne antitumour antibiotic C-1027 [1]) (Reversibility: ?) [1]

**P** 3-enolpyruvoylanthranilate + FMNH<sub>2</sub>

### Cofactors/prosthetic groups

FMN <1> [1]

**Metals, ions**

Iron <1> (<1> iron-sulfur enzyme. SgcG contains a [Fe-S] cluster with all four Cys found in SgcG involved in iron coordination [1]) [1]  
Mg<sup>2+</sup> <1> (<1> activity depends on [1]) [1]

**Turnover number (s<sup>-1</sup>)**

15 <1> (2-amino-2-deoxyisochorismate) [1]  
17 <1> (FMN) [1]

**K<sub>m</sub>-Value (mM)**

0.0012 <1> (FMN) [1]  
0.056 <1> (2-amino-2-deoxyisochorismate) [1]

**4 Enzyme Structure****Subunits**

? <1> (<1> x \* 29100, SDS-PAGE [1]) [1]

**5 Isolation/Preparation/Mutation/Application****Purification**

<1> (recombinant enzyme) [1]

**Cloning**

<1> (cloned into pET-30 Xa/LIC and expressed in Escherichia coli) [1]

**References**

- [1] Van Lanen, S.G.; Lin, S.; Shen, B.: Biosynthesis of the enediyne antitumor antibiotic C-1027 involves a new branching point in chorismate metabolism. Proc. Natl. Acad. Sci. USA, **105**, 494-499 (2008)