

Amidase (AMD)

Cat. No. AMD-11 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

Description

AMD is a useful tool to catalyze regio- and stereoselective synthesis of chiral carboxylic acids and their derivatives from a variety of aliphatic and aromatic amides. Catalyze the hydrolysis of various endogenous and foreign aliphatic and aromatic amides by transferring an acyl group to water with the production of free acids and ammonia. Hydroxamic acids and other organic acids are widely used as drugs because they are constituents of growth factors, antibiotics and tumor inhibitors. The amidases can be divided into R type and S type acylases according to the catalyst stereoselectivity. In addition to catalyzing the hydrolysis of amides, amidase can also catalyze acyl transfer reactions in the presence of co-substrates such as hydroxylamine. Amidase with different sources have different substrate specificity, some of them can only hydrolyze aromatic amides, some of them can only hydrolyze aliphatic amides, and some hydrolyze α - or ω -amino amides. Most of the amines have good catalytic activity only for acyclic or simple aromatic amides, but for complex aromatics, heterocyclic amides, especially amides with ortho substituents, are generally low in activity (only a few enzymes exhibit better catalytic effects).

Applications

1. Enzyme screening should be carried out for specific substrates because of the substrate specificity, and get an enzyme that catalyzes the target substrate with best catalytic effect. 2. Never contact with extreme conditions such as: high temperature, high/low pH and organic solvent with high concentration. 3. Normally, the reaction system should include substrate, buffer solution (The optimum reaction pH of enzyme). Co-substrates such as hydroxylamine should be presence in acyl transfer reaction system. 4. AMD should be added last into reaction system with optimum

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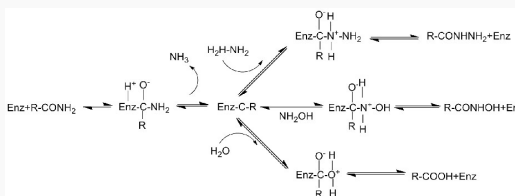
Advantages

GENE INFORMATION

Official Symbol	AMD
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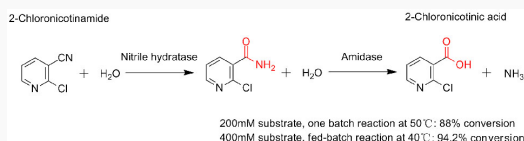
Synonyms	Amidase; AMD
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Catalytic mechanism



Application

Examples



Application Examples

Compound	Structural formula	Relative activity(%)	e.e.value(%)
Acetamide	<chem>CC(=O)N</chem>	14±1.8	—
Propionamide	<chem>CCC(=O)N</chem>	65±7.2	—
Butanamide	<chem>CCCC(=O)N</chem>	84±6.8	—
Hexanamide	<chem>CCCCCC(=O)N</chem>	205±7.6	—
Acrylamide	<chem>CC(=O)N</chem>	64±4.6	—
Isobutyramide	<chem>CC(C)C(=O)N</chem>	82±6.2	—
2,2-Dimethylcyclopropanecarboxamide	<chem>CC1(C)CC1C(=O)N</chem>	13±1.5	96(5)
Benzamide	<chem>c1ccccc1C(=O)N</chem>	100±2.8	—
Phenylacetamide	<chem>c1ccccc1CC(=O)N</chem>	37±5.4	—
2-Phenylacetamide	<chem>c1ccccc1C(C)C(=O)N</chem>	76±6.7	97(5)
Mandelamide	<chem>c1ccccc1C(O)C(=O)N</chem>	26±3.2	96(5)
2-(4-Chlorophenyl)-3-methylbutyramide	<chem>Cc1ccccc1C(C)C(=O)N</chem>	1.8±0.2	99(5)
Naphthalene-2-carboxamide	<chem>c1ccc2cc(C(=O)N)ccc2c1</chem>	201±8.4	—

Application Examples

Hydrolysis activity to different Amide Substrates

Substrate	Specific activity μmols min ⁻¹ mg ⁻¹	Substrate	Specific activity μmols min ⁻¹ mg ⁻¹
Acetamide	3.8	o-OH benzamide	1.4
Propionamide	3.9	p-OH benzamide	1.2
Lactamide	12.8	o-NH ₂ benzamide	1.0
Butyramide	11.9	p-NH ₂ benzamide	0.8
Isobutyramide	26.2	o-Toluidide	0.3
Pentanamide	22.0	p-Toluidide	8.1
Hexanamide	6.4	Nicotinamide	1.7
Cyclohexanamide	19.5	Isonicotinamide	1.8
Acrylamide	10.2	Picolinamide	2.1
Metacrylamide	3.5	3-Phenylpropionamide	7.6
Prolinamide	3.4	Indol-3-acetamide	1.9
Benzamide	6.8		

The reaction was carried out in 50mM sodium phosphate buffer solution, pH 7.5, at 70 °C.

Amides	Hydroxylamine	Hydrazine
Acetamide	8.4	1.4
Propionamide	18.4	3.0
Isobutyramide	25.0	22.7
Benzamide	9.2	6.1

The reaction was carried out in 50mM sodium phosphate buffer solution, pH 7.5, at 70 °C.

Related reagent concentration: amides, 100 mM(benzamide, 10 mM); hydroxylamine and hydrazine, 400 mM, enzyme 0.9 μM.

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