

Anthranillic acid

2-nitrobenzoate

3-phenylpropanoate

2 NADPH
2 H⁺
H₂O
2 NADP⁺

H⁺
Oxygen
NADH
NAD⁺

3-phenylpropionate dioxygenase *hcaF* SGRAN_1578
Ring-hydroxylating dioxygenase large subunit *hcaE* SGRAN_1577
Ring hydroxylating dioxygenase alpha subunit *thnA1* SGRAN_2796

2-hydroxylaminobenzoate

3-(5,6-dihydroxycyclohexa-1,3-dien-1-yl)propanoate

NAD⁺
NADH H⁺

2,3-dihydroxy-2,3-dihydrophenylpropionate
dehydrogenase *bphB* SGRAN_1582
2,3-dihydroxy-2,3-dihydrophenylpropionate
dehydrogenase *thnB* SGRAN_2800

3-hydroxyanthranilate

oxygen
H⁺

3-(2,3-dihydroxyphenyl)propanoate

oxygen
H⁺

SGRAN_1575
SGRAN_1576

3-hydroxyanthranilate 3,4-dioxygenase *nbaC*
SGRAN_3549

aminocarboxymuconate semialdehyde

H⁺
CO₂

Aminocarboxymuconate semialdehyde
decarboxylase *nbaD*
SGRAN_3562

(2Z,4E)-2-hydroxy-6-oxonona-2,4-diene-1,9-dioate

H₂O
H⁺
succinate

SGRAN_1584

2-aminomuconate 6-semialdehyde

H₂O
NAD⁺
2 H⁺
NADH

Aminomuconate semialdehyde
dehydrogenase *amnC*
SGRAN_3552

(2Z)-2-hydroxypenta-2,4-dienoate

spontaneous

2-aminomuconate

H₂O H⁺
ammonium

2-aminomuconate deaminase *amnD*
SGRAN_3550

2-oxopent-4-enoate

H₂O

2-keto-4-pentenoate hydratase *mhpD2* SGRAN_1420
2-keto-4-pentenoate hydratase *mhpD* SGRAN_1581
2-oxodec-4-ene-1,10-dioic acid hydratase *thnE* SGRAN_2798

4-hydroxy-2-oxopentanoate

pyruvate

4-hydroxy-2-oxovalerate aldolase *thnF* SGRAN_2797
4-hydroxy-2-keto-pentanoic acid aldolase *mhpE2* SGRAN_1422
4-hydroxy-2-keto-pentanoic acid aldolase *mhpE* SGRAN_1579

(3E)-2-oxohex-3-enedioate

CO₂
H⁺

4-oxalocrotonate
decarboxylase *amnE*
SGRAN_3551

acetaldehyde

NAD⁺
coenzyme A
NADH
H⁺

Acetaldehyde dehydrogenase *mhpF2* SGRAN_1421
Acetaldehyde dehydrogenase 2/3 *mhpF* SGRAN_1580

acetyl-CoA