Table S1. Primers used in this study

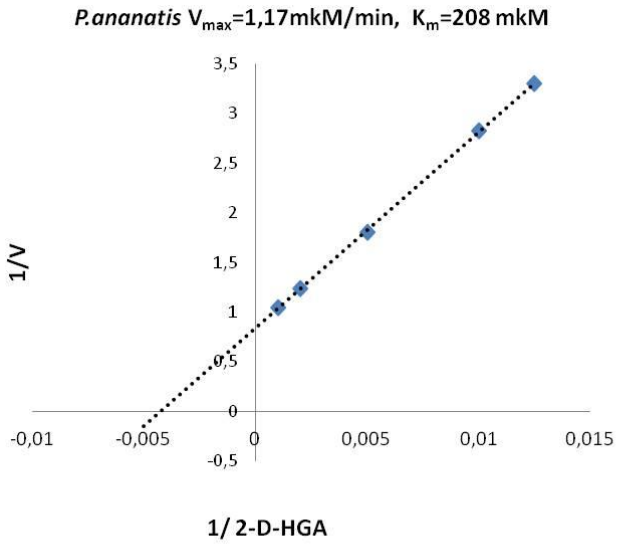
Primer	Sequence	Description
ydiJ_EcF1	ATGATTCGAACATGATTCCACAGATTTCCCAG *Bsp119I*	Forward primer for *ydiJ* from *E. coli*
ydiJ_EcR1	ATATCTCGAGTCATTTAATAATCTCCAGTAA *XhoI*	Reverse primer for *ydiJ* from *E. coli*
ydiJ_EcF2	ATATCCATGGTTCCACAGATTTCCCAGGCACC *NcoI*	Forward primer for *ydiJ* from *E. coli*
ydiJ_EcR2	ATATGGATCCCCTTTAATAATCTCCAGTAAAGCCTG *BamHI*	Reverse primer for *ydiJ* from *E. coli*
ydiJ_PaF1	TAGTGACATATGATCCCACAGATTTCTCAGGCACC *NdeI*	Forward primer for *ydiJ* from *P. ananatis*
ydiJ_PaR1	GTGACTCGAGGCGTCGCCTCACCTTTTCAGATT *XhoI*	Reverse primer for *ydiJ* from *P.ananatis*
ydiJ_PaF2	ATTAACATGTTCCCACAGATTTCTCAGGCACC *PscI*	Forward primer for *ydiJ* from *P. ananatis*
ydiJ_PaR2	GTGACTCGAGGATTAACTCAAGCAGTGCCTGAAG *XhoI*	Reverse primer for *ydiJ* from *P. ananatis*
ydiJ_PaR_D	GGATGACGCATGCCGTTGCCCTCCACGCGCTTAACC TGAAGCCTGCTTTTTTATACTAAGTTGG	Reversed primer for deletion of *ydiJ* from *P. ananatis*
ydiJ_PaF_D	TCCCACAGATTTCTCAGGCACCGGGTCTTATCCAGC CGCTCAAGTTAGTATAAAAAAGCTGAAC	Forward primer for deletion of *ydiJ* from *P. ananatis*
ydiJ_PaF_P8	GCGTTTAAACAGGCTTGTAAAGAAAAGGTTTCAGC CTGAAGCCTGCTTTTTTATACTAAGTTGG	Forward primer for replacement of wild-type P_{ydiJ} promoter by P_{nlp8} upstream of gene $ydiJ_{Pa}$
ydiJ_PaR_P8	GATAAGACCCGGTGCCTGAGAAATCTGTGGGATCA TTTATCCCCCAGGAAAAATTGGTTA	Reverse primer for replacement of wild-type P_{ydiJ} promoter by P_{nlp8} upstream of gene $ydiJ_{Pa}$
serA_EcF	AAGCTTGCATGCATTCCAACTGCGCTAATGACGC *SphI*	Forward primer for construction of pMIV-P_{nlp8}-serA348(Ec) expression plasmid
serA_EcR	CTGTTTTCTAGAGCGTGGGATCAGTAAAGCAGGC *XbaI*	Reverse primer for construction of pMIV-P_{nlp8}-serA348(Ec) expression plasmid
serA_EcF_aux	AACCAATTTTTCCTGGGGGTCGACATGGCAAAGGT ATCACTGGAAAAAGAC *SalI*	Forward auxiliary primer for pMIV-P_{nlp8}-serA348(Ec) construction
serA_EcR_aux	GTCTTTTTCCAGTGATACCTTTGCCATGTCGACCCCC AGGAAAAATTGGTT *SalI*	Reverse auxiliary primer for pMIV-P_{nlp8}-serA348(Ec) construction
ydiJ_EcF_P8	GCTGCGGCTACGTTCGTTCACCCCAGTCACTTACTA TGAAGCCTGCTTTTTTATACTAAGTTGG	Forward primer for replacement of wild-type P_{ydiJ} promoter by P_{nlp8} upstream of gene $ydiJ_{Ec}$
ydiJ_EcR_P8	AACGACGCCGGGTGCCTGGGAAATCTGTGGAATCA TTTATCCCCCAGGAAAAATTGGTTA	Reverse primer for replacement of wild-type P_{ydiJ} promoter by P_{nlp8} upstream of gene $ydiJ_{Ec}$
ydiJ_EcF_D	TTCCACAGATTTCCCAGGCACCCGGCGTCGTTCAAC CGCTCAAGTTAGTATAAAAAAGCTGAAC	Forward primer for deletion of *ydiJ* from *E. coli*
ydiJ_EcR_D	ACAGGATGGCGTACCCCCGTGCCTTCAACCCGTTTT TGAAGCCTGCTTTTTTATACTAAGTTGG	Reverse primer for deletion of *ydiJ* from *E. coli*

Recognition sites for restriction endonucleases are underlined, start codons are in bold

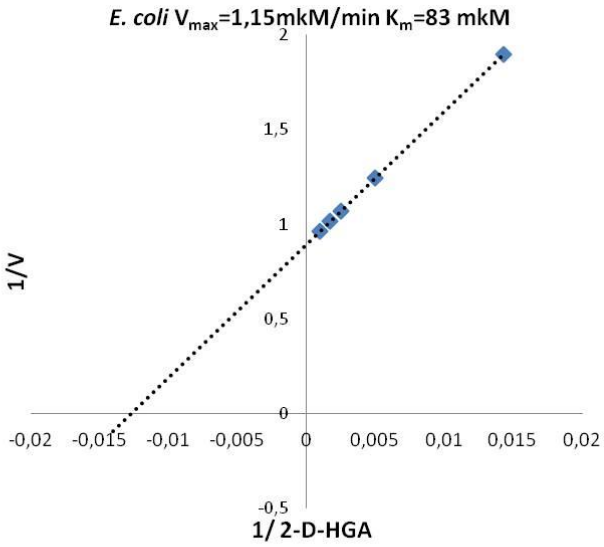
Table S2. Distribution of YdiJ-like enzymes with identity to YdiJEc more than 50% among Proteobacteria filum (taxid_1224) constructed by means of the NCBI BLASTP service (Database: Reference proteins
(refseq_protein))

Table S3. Taxonomy presentation of distribution of YdiJ-like enzymes with identity to YdiJEc more than 50% among Proteobacteria filum (taxid_1224) constructed by means of the NCBI BLASTP service (Database: Reference proteins (refseq_protein))

Figure S1. Lineweaver–Burk plot for the purified D2HGDHPa (A) and D2HGDHEc (B) toward D-2-HGA. Activity of D2HGDHs was measured as described in "Materials and methods" at variable concentrations of D-2-HGA at optimum pH. Data shown are mean ± s.d. (n = 3 independent experiments)


P.ananatis V_{max}=1,17mkM/min, K_m=208 mkM
1/V
1/ 2-D-HGA
3,5
3
2,5
2
1,5
1
0,5
0
-0,5
-0,01
-0,005
0
0,005
0,01
0,015

A


E. coli V_{max}=1,15mkM/min K_m=83 mkM
1/V
1/ 2-D-HGA
2
1,5
1
0,5
0
-0,5
-0,02
-0,015
-0,01
-0,005
0
0,005
0,01
0,015
0,02

B