

Py-RNR-R2: Plasmodium yoelii ribonucleotide reductase, R2 subunit (PY03671)

PDB:2P1I

Revision

Revision Type:created

Revised by:created

Revision Date:created

Entry Clone Accession:PY03671

Entry Clone Source:*Plasmodium yoelii* genomic DNA

SGC Clone Accession:plate MAC00E:A5

Tag:N-terminal: N-terminal His-tag with integrated TEV protease site (*):

MGSSHHHHHHSSGRENLYFQ*G

Host:E. coli BL21-(DE3)-CodonPlus-RIL from Stratagene

Construct

Prelude:

Sequence:

mgsshhhhhhssgrenlyfqgSKSASFSKQEKEFSDFQSKESNEKILNKESNRFTLHPIMYPEVWNFYKKAESFWTAEEIDLSSD
LKDFEKLNVNEKHFIKHVLAFFAASDGIVLENLASKFLREVEIEAKKFYSFQIAVENIHSETYSLLIDNYIKDEKERLNLFHAIEN
IPAICKNKALWAAKWINDTNSFAERIVANACVEGILFSGSFCAIFWFKQNKHLGLTFSNELISRDEGLHTDFNCLIYSLLENKLPEN
VVQNIIVKEAVEVERSFICESLPCDLIGMNSRLMSQYIEFVADRLLECLGCSKVFHSKNPFNWMDLISLQGKTNFFEKRVADYQKSGV
MAQRKEQVF

Vector:p15-Tev-LIC

Growth

Medium:Terrific Broth (TB)

Antibiotics:50 microG/mL kanamycin and 25 microG/mL chloramphenicol

Procedure:A single colony was inoculated into 10 mL of LB with of Antibiotics and incubated with shaking at 250 rpm overnight at 37 degC. The culture was transferred into 50 mL of TB with Antibiotics in a 250 mL shaking flask and incubated at 37 degC for 3 hours. The culture was then transferred into 1.8 L of above-specified growth medium with Antibiotics and 0.3 mL of antifoam (Sigma) in a 2L bottle and cultured using the LEX system to an OD600 of 2.5, cooled to 15 degC and induced with 0.5 mM isopropyl-1-thio-D-galactopyranoside (IPTG) overnight at 15 degC.

Purification

Procedure

The cleared cell lysate was loaded onto a DE52 (Whatman) column packed with 10 g of resin (previously activated with 3 M NaCl and equilibrated with Binding Buffer), and subsequently

onto a 2.5 mL Ni-NTA column at approximately 1.5 mL/min. When all the lysate was loaded, 20 mL of Binding Buffer was added to the DE52 column. Then the Ni-NTA column was washed with 200 mL of Wash Buffer at 2.5 mL/min. After washing, the protein was eluted from the Ni-NTA column with 15 mL of Elution Buffer. EDTA was added immediately to 1 mM. DTT was then added to 1 mM 15 minutes later.

The protein was dialysed overnight in a dialysis cassette (Pierce) in Crystal Buffer. The following day, it was concentrated using a 15 mL Amicon Ultra centrifugal filter device Millipore (5 kD cutoff). Protein concentration was estimated by means of absorbance at OD280. Aliquots of the purified protein were flash frozen in N₂(l) and stored at -80°C.

Extraction

Procedure

Cells were resuspended to approximately 40 mL/L of cell culture in Binding Buffer with protease inhibitor (1 mM benzamidine-HCl and 1 mM phenylmethyl sulfonyl fluoride, PMSF).

Resuspended pellets stored at -80 degC were thawed overnight at 4 degC on the day before purification. Prior to mechanical lysis, each pellet from 1 L of culture was pretreated with 0.5% CHAPS and 500 units of benzonase for 40 minutes at room temperature. Cells were mechanically lysed with a microfluidizer (Microfluidizer Processor, M-110EH) at approximately 18,000 psi. The cell lysate was centrifuged at ~75,000 x g for 20 minutes at 10 degC.

Concentration:

Ligand

MassSpec:

Crystallization: The protein was crystallized by means of sitting drop vapor diffusion in Intelli-Plate. The plate was set with 0.5 microL protein and 0.5 microL buffer in each drop, and 100 microL reservoir volume per well. Crystals grew in 2.0 M sodium formate, 100 mM Hepes and pH 8.0 at 20 degC.

NMR Spectroscopy:

Data Collection:

Data Processing: