

CpHSP70

PDB:3KVG

Revision

Revision Type:created

Revised by:created

Revision Date:created

Entry Clone Accession:cgd2_20

Entry Clone Source:

SGC Clone Accession:cgd2_20:G15-E396:G5

Tag:N-terminal tag: mhhhhhssgrenlyfqg

Host:BL21-(DE3)-V2R-pRare2

Construct

Prelude:

Sequence:

GPAIGIDLGTTYSCVGVWRNDTVDIVPNDQGNRTTPSYVAFTETERLIGDAAKNQVARNPENTVFDKRLIGRKFDQAVQSDMTHW
PFKVVVRGPKDKPIISVNYLGEKKEFHAEESISAMVLQMKKEISEAYLGRQIKNAVVTVPAYFNDSQRQATKDAGAIAGLNMRIINEP
TAAAIAYGLDKKGTGERNVLI FDLGGGTFDVSLLTIEDGIFEVKATAGDTHLGGEDFDNRLVEFCVQDFKRKNRGMDLTTNARALRR
LRTQCERAKRTLSSSTQATIELDSLYEGIDYSVAISRARFEELCADYFRATLAPVEKVLKDAGMDKRSVHDVVLVGGSTRIPKVQAL
IQEFFNGKEPCKAINPDEAVAYGA AVQAAILNGE

Vector:p15-mhl

Growth

Medium:

Antibiotics:

Procedure:Cryptosporidium parvum Hsp70, cgd2_20, was expressed in E. coli BL21(λ DE3) V2R pRare2 in TB growth media in the presence of carbenicillin/chloramphenicol (100 microgram/mL and 34 microgram/mL, respectively). A single colony was inoculated into 25 mL of LB with of carbenicillin/chloramphenicol (100 microgram/mL and 34microgram/mL respectively) in a 50 mL Falcon tube and incubated with shaking at 250 rpm overnight at 37°C. Then the culture was transferred into 900 mls of TB with 100 microgram/mL Carbenicillin and 34 microgram/ml chloramphenicol , 0.3 mL of antifoam (Sigma), 9 mls of 0.83 M MgSO₄ and trace elements in a 1L bottle and cultured using the LEX system to an OD600 of 5, cooled to 15°C, and induced with 0.5 mM isopropyl-1-thio-D-galactopyranoside (IPTG) overnight at 15°C.

Purification

Procedure

The cleared lysate was loaded onto a column prepacked with 10 g DE52 (Whatman) anion exchange resin (previously activated with 2.5 M NaCl and equilibrated with Binding Buffer); and

subsequently onto a 2mL Ni-NTA (Qiagen) column pre-equilibrated with Binding Buffer at approximately 1 - 1.5 mL/min. The volume of the Ni-NTA resin was pre-determined by the predicted protein yield from test expression analysis. After the lysate was loaded, the DE52 was further washed with 20 mL of Binding Buffer. The Ni-NTA column was then washed with 200 mL of Wash Buffer at 2 - 2.5 mL/min. After washing, the protein was eluted with 15 mL of Elution Buffer. 1 mM TCEP and 1 mM EDTA was added to the eluted cgd2_20.

The sample was then loaded onto a superdex 200 gel filtration column. The eluted protein (in 10 mM Hepes, pH 7.5 and 500 mM NaCl) was concentrated using a 15 ml Amicon Ultra centrifugal filter device (Millipore) with a 10 kDa cutoff. PP-HSP70 (cgd2_20) was concentrated to 9.8 mg/ml and stored at 4 °C.

Extraction

Procedure

The culture was harvested by centrifugation. Pellets from 2 L of culture were resuspended to approximately 40 mL/L of cell culture in Binding Buffer with the addition of protease inhibitors (1 mM benzamidine and 1 mM phenylmethyl sulfonyl fluoride (PMSF)). Resuspended pellets stored at -80 °C were thawed overnight at 4 °C 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 18000 psi; and the cell lysate was centrifuged using a Beckman JA-25.50 rotor at ~75000 x g (24000 rpms) for 20 minutes at 10 °C.

Concentration:9.8 mg/ml

Ligand

MassSpec:

Crystallization:The protein was crystallized at 20 °C in 10% PEG 4000, 0.1 M NaAcetate, 0.1 M NaAcetate pH 4.6 using the Sitting drop method. ligand: 2 mM AMPPNP, 4 mM MgCl₂, 2 mM TCEP

NMR Spectroscopy:

Data Collection:

Data Processing: