E. coli RecA Protein, functional

01-001　100 µg

Storage : Shipped at 4°C or -20℃ and store at -20°C (-80°C for long-term storage).

Applications

1) Studies on homologous recombination mechanism and SOS response.
2) Useful in the screening using probe from library by promotion of DNA hybridization (1).
3) Facilitate DNA observation by electron microscope due to nucleofilament formation with DNA.

Form: 1.0 mg/ml in 20 mM Tris-HCl (pH 8.0), 1 mM EDTA, 150 mM KCl,1 mM DTT, 50% glycerol

Purity: Over 90% by SDS-PAGE (CBB staining)

Background: *E. coli* RecA protein is a very important enzyme for homologous recombination and recombinational repair. Its synthesis is induced by SOS response caused by DNA damage. RecA protein has multiple functions such as single stranded DNA dependent ATPase activity, DNA annealing activity, formation of D-loop and Holliday structure in homologous recombination reaction, and coprotease activities that promote self-cleavages of LexA repressor, lambda phage repressor and UmuD protein. RecA protein binds to single and double stranded DNA for nucleofilament formation. It carries out a central role in homologous recombination. Its homologs in eukaryotes are Rad51 protein and Dmcl protein (2).

The product is over-expressed as a recombinant protein and highly purified by several steps of chromatography. A single band is observed by SDS-PAGE at 38 kD (Fig.).

Data Link UniProtKB/Swiss-Prot P0A7G6 (RECA_ECOLI)

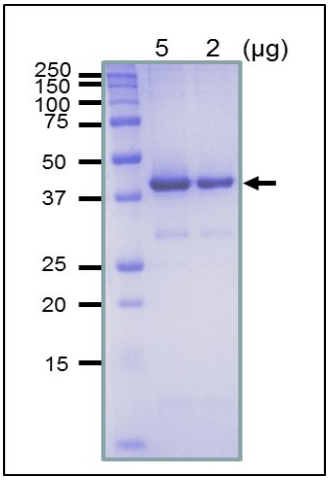

Figure SDS-polyacrylamide gel electrophoresis of purified recombinant RecA protein.

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References: This protein was used in the following publications,

1. Horii T et al.Regulation of SOS functions: purification of E. col LexA protein and determination of its specific site cleaved by the RecA protein Cell. 27:515-22. (1981) PMID: 6101204
2. Oura S et al Biomolecular recognition ability of RecA proteins for DNA single-walled carbon nanotubes. Colloids Surf B Biointerfaces. 2015 Feb 1;126:496-501. PMID: 25612818
3. Ogura S et al. Biomolecular recognition ability of RecA proteins for DNA on single-walled carbon nanotubes. Colloids and Surfaces B: Biointerfaces Volume 126, 1 February 2015, Pages 496-501.
4. Oura S and Umemura K. Optimal conditions for decorating outer surface of single-walled carbon nanotubes with RecA proteins. Japanese Journal of Applied Physics, 2016.Volume 55, Number 3S2
5. Umemura K et al. Protein Adsorption on Hybrids of Thermoresponsive Polymers and Single-Walled Carbon Nanotubes. International Journal of Polymer Science Volume 2016, Article ID 3539609, 5 pages
6. Ishibashi Y et al. Adsorption of DNA binding proteins to functionalized carbon nanotube surfaces with and without DNA wrapping.Eur Biophys J. 2017 Sep;46(6):541-547. PMID:28204854