

Product Information

SILu™Prot CRP, C-reactive protein, human recombinant, expressed in HEK cells SIL MS Protein Standard, ¹³C- and ¹⁵N-labeled

Catalog Number **MSST0021**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonyms: pentraxin, PTX1

Product Description

SILu™Prot CRP is a recombinant, stable isotope-labeled human CRP which incorporates [¹³C₆, ¹⁵N₄]-Arginine and [¹³C₆, ¹⁵N₂]-Lysine. Expressed in human 293 cells, it is designed to be used as an internal standard for bioanalysis of CRP in mass spectrometry. SILu™Prot CRP is a monomer of 226 amino acids (including a C-terminal polyhistidine and FLAG® tags), with a calculated molecular mass of 25.6 kDa.

CRP is a hepatically derived pentraxin.¹ It exists mainly as a pentamer in a cyclic structure with 5 identical 23 kDa subunits in the blood.¹ In addition to its role as an "acute phase" protein or first-line defense molecule against pathogenic organisms,² baseline levels of CRP correlate positively to adverse cardiovascular events.² CRP is, therefore, considered a "risk factor" for cardiovascular disease.³ In humans, treatment with statin therapy reduces levels of both LDL-C and CRP, and concurrently there is a reduction in the number of cardiovascular events.^{4,5} A recent study suggests patients with elevated basal levels of CRP are at an increased risk of diabetes, in addition to cardiovascular disease.⁶ A study of over 700 nurses showed that those in the highest quartile of *trans* fat consumption had blood levels of CRP that were 73% higher than those in the lowest quartile.⁷

Each vial contains 10–13 μg of SILu™Prot CRP standard, in a 0.1 mg/mL solution of 20 mM sodium phosphate, pH 8.0, 1 M NaCl, 1 mM EDTA, and 25% glycerol. Vial content was determined by the Bradford method using BSA as a calibrator. The correction factor from the Bradford method to Amino Acid Analysis is 130% for this protein.

Identity: Confirmed by peptide mapping

Purity: ≥95% (SDS-PAGE)

Heavy amino acid incorporation efficiency: ≥98% (MS)

UniProt: P02741

Sequence Information

The C-terminal polyhistidine and FLAG tags are italicized.

QTDMSRKAFVFPKESDTSYVSLKAPLTKPLKAFTVCL
HFYTELSSTRGYISFSYATKRQDNEILIFWSKDIGYSF
TVGGSEILFEVPEVTVAPVHICTSWESASGIVEFWVD
GKPRVRKSLKKGTYVGAESIILGQEQDSFGGNFEGS
QSLVGDIGNVNMWDFVLPDEINTIYLGPFSPNVLN
WRALKYEVQGEVFTKPQLWPDKDDDDKGGHHHHHHH
HHGGQ

Transitions for three peptides (underlined) suggested for selected reaction monitoring analysis (SRM) are provided for download on the product display page at www.sigmaaldrich.com.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

Store the product at $-20\text{ }^{\circ}\text{C}$. The product is stable for at least 2 years as supplied. After initial thawing it is recommended to store the protein in working aliquots at $-20\text{ }^{\circ}\text{C}$.

References

1. Pepys, M.B., and Hirschfield, G.M., C-reactive protein: a critical update. *J. Clin. Invest.*, **111**, 1805–1812 (2003).
2. Young, B. et al., C-reactive protein: A critical review. *Pathology*, **23**, 118-124 (1991).
3. Tracy, R.P. et al., Lifetime smoking exposure affects the association of C-reactive protein with cardiovascular disease risk factors and subclinical disease in elderly subjects. *Arterioscler. Thromb. Vasc. Biol.*, **17**, 2167-2176 (1997).
4. Kinlay, S. Low-density lipoprotein-dependent and -independent effects of cholesterol-lowering therapies on C-reactive protein: a meta-analysis. *J. Am. Coll. Cardiol.*, **49** 2003–2009 (2007).
5. Nissen, S.E. et al., Statin therapy, LDL cholesterol, C-reactive protein, and coronary artery disease. *N. Engl. J. Med.*, **352**, 29–38 (2005).
6. Pradhan, A.D. et al., C-Reactive Protein, Interleukin 6, and Risk of Developing Type 2 Diabetes Mellitus. *J. Am. Med. Assoc.*, **286**, 327-334 (2001).
7. Lopez-Garcia, E. et al., Consumption of trans fatty acids is related to plasma biomarkers of inflammation and endothelial dysfunction. *J. Nutr.*, **135**, 562–566 (2005).

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Legal Information

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