Data Sheet (Cat.No.TMPY-00105)

TargetMol

Recombinant Protein G

General Information

Expression Host: E. coli

Molecular Weight: 31kD (predicted)

QC Testing

Biological Activity: Activity has not been tested. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.

Purity: > 95% by SDS-PAGE

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

Proteins are shipped with blue ice.

Protein Background

Protein G is a bacterial cell wall protein expressed at the cell surface of certain group C and group G Streptococcal strains.

It has affinity for both Fab- and Fc-fragments of human IgG by independent and separate binding sites. Binding to the Fc region of immunoglobulins from several species by a non-immune mechanism exhibits great affinity for almost all mammalian immunoglobulin G (IgG) classes, including all human IgG subclasses (IgG1, IgG2, IgG3 and IgG4) and also rabbit, mouse, and goat IgG. Protein G bound all tested monoclonal IgG from mouse IgG1, IgG2a, and IgG3, and rat IgG2a, IgG2b, and IgG2c. In addition, polyclonal IgG from man, cow, rabbit, goat, rat, and mouse bound to protein G, whereas chicken IgG did not. Protein G has also been shown to bind human serum albumin but at a site that is structurally separated from the IgG-binding region. Protein G shows a broader range of binding to IgG subclasses than staphylococcal protein A. This applies to polyclonal IgG from cow, rat, goat, human and rabbit sources as well as several of rat and mouse monoclonal antibodies. In contrast, protein A shows stronger interaction with polyclonal IgG from human, guinea-pig, pig, dog and mouse. Both proteins interacted with same relative strength to polyclonal rabbit IgG.

Protein G consists of nearly 600 amino acid residues. The carboxy-terminal half contains three immunoglobulin G (IgG)-binding domains which are referred to as domains I, II, and III or units C1, C2 and C3, each containing 55 amino acid residues with two 'spacers', of 16 amino acids, Dl and D2. Following the IgG-binding regions there is a region W, which most likely is involved in cell wall interactions. Domains in the NH2-terminal half of the protein

have been found to bind human serum albumin (HSA).

Reference

L Björck, G Kronvall. (1984) Purification and some properties of streptococcal protein G, a novel IgG-binding reagent. The Journal of Immunology, Vol 133, Issue 2: 969-974
Björck L, et al. (1987) Streptococcal protein G, expressed by streptococci or by Escherichia coli, has separate binding sites for human albumin and IgG. Mol Immunol., 24(10): 1113-22
Eirini Kitsiouli, et al. (2002) Lipids are co-eluted with immunoglobulins G during purification by recombinant streptococcal protein G affinity chromatography. Journal of Immunological Methods, 271: 107– 111
B Akerstrom, et al. (1985) Protein G: a powerful tool for binding and detection of monoclonal and polyclonal antibodies. The Journal of Immunology, Vol 135, Issue 4: 2589-2592
Bengt Guss, et al. (1986) Structure of the IgG-binding regions of streptococcal protein G. The EMBO Journal, vol.5 no.7: 1567-1575