Complement

Technical Data Sheet

Cobra Venom Factor

For **Research Use Only.** Not for use in diagnostic procedures

Background

Cobra Venom Factor (CVF), sometimes referred to as $C3b_{(Cobra)}$, is the non-toxic, complement activating component of cobra venom.[1-3] Like naturally occurring C3b, CVF forms a complex with complement components Factor B and Factor D. This CVFBbD convertase is capable of activating C3 in a wide variety of species via the alternative complement pathway. Unlike the naturally occurring convertase (C3bBbD), the $C3b_{(Cobra)}$BbD convertase is Factor H resistant and is therefore not inactivated by Factor I or CR1. Given appropriate incubation time, CVF will convert nearly 100% of the C3 to C3 end products. Unlike CVF purified from the *Naja naja haje* species, CVF from *Naja naja kaouthia* activates the terminal pathway directly by forming a C5 convertase.[4,5] This depletes C5 in a manner analogous to that described above for C3. Levels of iC3b, C3a, SC5b-9, C5a and the Factor B cleavage product Bb are all extremely high in CVF treated sera.

Storage and Handling

Purified CVF may be stored at –70°C until the expiration date listed on the vial and the accompanying Certificate of Analysis. CVF should be thawed rapidly at 37°C and immediately placed on ice until use.

Applications

When using any CVF *in vivo* or *in vitro*, it is important to monitor units of activity rather than µg/ml as activity/µg can vary slightly between preparations and suppliers. **In general, one unit of CVF is equal to 2 µg to 6 µg of CVF.**

Quidel's CVF has been used in a variety of *in vitro* and *in vivo* models to deplete complement. For *in vitro* experiments, 8 units/mL to 20 units/mL of serum is adequate to convert nearly all the available C3 to C3 fragments when incubated with neat human serum for 60 to 90 minutes at 37° (data on file at Quidel).This will also convert nearly all the available C5 to C5a and SC5b-9.

Quidel's CVF has also been used successfully in a variety of animal models,[6-8] including mice, rats, guinea pigs, various primates, dogs, pigs and sheep to deplete complement *in vivo*.This application has not been tested or verified at Quidel. For a list of studies, please refer to Quidel's expanded bibliographic references for this product, available upon request from Quidel Technical Support.

Specifications

- Volume/vial: 1.0 mL
- Storage: ≤ 70°C
- Concentration: 1.0 mg/mL to 1.2 mg/mL
- Purity: ≥ 95% by SDS page
- Activity/vial: ≥ 350 units
- Buffer: Phosphate Buffered Saline (pH 7.2 ± 0.2)

References

[1]Fritzinger, D.C., et al. Molecular cloning and derived primary structure of cobra venom factor. PNAS 91:26, 12775-12779 (1994).

[2]O'Keefe, M.C., et al. Comparison of the Alpha Chain Fragments of C30 and C3c and CVF implications for C3 convertase formation. Complement 4:3-4 (1987).

[3]Gowda D.C., et al. Immunoreactivity and function of oligosacharides in cobra venom factor. J Immunol 152:5, 2977-86 (1994).

[4]Van Den Berg, C.W., et al. *In vivo* anti complementary activities of cobra venom factors from *Naja naja* and *Naja haje*. J Immunol Meth 12:6,287-294 (1991).

[5]Bauman, N. Lack of complement C5 convertase generating activity in *Naja haje* cobra venom factor. J Immunol 120:5, 1763-1764 (1978).

[6]Till, G.O., et al. Activation of C5 by CVF is required in nuetrophil-mediated lung injury in the rat.Am J Pathol 129:144-53 (1987).

[7]Rajasinghe, H., et al. Key role of the alternative pathway in hyperacute rejection of rat hearts transplanted into fetal sheep. Transplantation 62:3, 407-426, 1996.

[8]Koymada, N., Bach, F. Transient complement inhibition plus T-Cell immunosuppression induces long term graft survival of mouse to rat cardiac xenografts. Transplantation 66:9, 1210-1215 (1998).

Normal Human Serum Complement – Cat. #A600

Also available:

Normal Human Serum Complement – Cat. #A112/Cat. #A113

Classical Pathway Activator – Cat. #A114