Ecarin from *Echis carinatus* venom

Product Number E0504

Storage Temperature -0 °C

**Product Description**

CAS Number: 55466-26-7

Molecular weight: 55 kDa (gel filtration in the presence of 6 M guanidine)

pI: 4.4-4.6

Synonym: ECV-prothrombin activator

The venom of *Echis carinatus* (saw-scaled viper) contains procoagulants. One of these procoagulants is the prothrombin-activating enzyme ECV-prothrombin activator or ecarin. Ecarin catalyzes the conversion (activation) of prothrombin to α-thrombin. Activation of prothrombin by ecarin differs significantly from that of Factor Xa. It cleaves only a single arginyl-isoleucyl bond that links the thrombin A and B chains in the prothrombin and forms a meizothrombin that consists of two polypeptide chains. The meizothrombin autocatalyzes to meizothrombin I and meizothrombin I generates α-thrombin. Ecarin activity is independent of Ca²⁺, phospholipid, and plasma clotting factors. Maximal activity is observed at pH 8.0-8.5 using Tris-HCl, phosphate, and glycine buffers.

The amino acid composition of this protein has been reported. About 25% of the amino acids are aspartic and glutamic acids. Hexosamines residues are present.

An assay used to determine the activity for ecarin has been reported.

The enzyme activity is totally inhibited by EDTA, o-phenanthroline, glutathione, cysteine, 2-mercaptoethanol, and dithiothreitol at concentrations between 5-10 mM. Phosphate ion inactivated or inhibited activity. At 10 mM, Co²⁺, Zn²⁺, Fe²⁺, Cd²⁺, Ni²⁺, Mn²⁺, and Hg²⁺ all have a strong inhibitory effect, but Ca²⁺, Cu²⁺, and Mg²⁺ have no effect. PCMB, iodoacetic acid, and N-ethylmaleimide have no effect on activity. Ecarin is insensitive to DFP, benzamidine and NPGB, as well as leupeptin, chymostatin, pepstatin, different trypsin inhibitors, and hirudin.

**Precautions and Disclaimer**

For Laboratory Use Only. Not for drug, household or other uses.

**Storage/Stability**

Upon heating for 10 minutes at 50 °C, the activator is stable in the pH range of 6.5-8.5, but is unstable below pH 5 and above pH 10. Ecarin in a 0.05 M Tris-HCl buffer, pH 8.0, becomes totally and irreversibly inactive when it is heated at 60 °C for 10 minutes. A solution of ecarin is stable for at least 3 months at -70 °C.

**References**


