

Product Information

Ecarin from *Echis carinatus* venom

Product Number **E 0504**
Storage Temperature -0 °C

Product Description

CAS Number: 55466-26-7
Molecular weight: 55 kDa (gel filtration in the presence of 6 M guanidine)¹
pI: 4.4-4.6¹
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 X_a. 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.¹⁻⁸

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.¹

An assay used to determine the activity for ecarin has been reported.⁹

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.^{1,8}

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.¹

References

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