Specification

E-64 A2157

Physical Description:	Solid
Product Code:	A2157
Product Name:	E-64
Specifications:	Assay (HPLC): min. 99 % α23°C/D; 1 %, 0.1 M HCl: +21° - +26° Solubility (2 %; H_2O): clear, colorless
WGK:	1
Storage:	-20°C
Molecular Formula:	$C_{15}H_{27}N_5O_5$
M:	357.40 g/mol
CAS:	66701-25-5
CS:	29251995

Comment

E-64 is an irreversible inhibitor of different cysteine proteases (papain, bromelain, ficin, cathepsin B, H and L, tumor-cathepsin, calpain, V-CATH from *Autographa californica* M nucleopolyhedro virus (AcMNPV) and *Streptococcus*-protease). All enzymes are completely inhibited by a concentration of 10 - 30 µM within 30 minutes (1-5). E-64 and other protease inhibitors (e. g. diisopropylfluorophosphate and PMSF) are able to inhibit the programmed cell death, that is induced by activation of the T cell receptor in different cell lines of the immune system, not by blocking the signal transduction. The effect of dexamethason, which induces apoptosis as an antagonist of the T cell receptor, is enhanced (3, 4).If proteins are expressed in the baculo virus system with a functional *v-cath* gene, very often a proteolytic activity can be observed. This reduces the quality of the expressed protein significantly. The addition of E-64 to all reaction steps avoids the degradation almost completely (5).**Stability**\: E-64 is stable against reducing agents. Stock solutions have concentrations between 1 mM and 10 mM in DMSO or 50 % ethanol and are stable for several days, if stored at \+4°C (2). Aliquots may be stored at -20°C for approx. one month.

Bibliography

(1)Barrett, A.J. *et al.* (1981) *Acta biol. med. germ.* **40**, 1513-1517E-64 and related epoxides as inhibitors of cysteine proteinases. (2)Barrett, A.J. *et al.* (1982) *Biochem. J.* **201**, 189-198E-64 and its analogues as inhibitors of cysteine proteinases including cathepsins B, H and L. (3)Sarin, A. *et al.* (1993) *J. Exp. Med.* **178**, 1693-1700Protease inhibitors selectively block T cell receptor-triggered programmed cell death in a murine T cell hybridoma and activated peripheral T cells. (4)Sarin, A. *et al.* (1994) *J. Immunol.* **153**, 862-872Inhibition of activation-induced programmed cell death and restoration of defective immune response of $HIV^{\+}$ donors by cysteine protease inhibitors. (5)Hom, L.G. & Volkman, L.E. (1998) *BioTechniques* **25**, 18-20Preventing proteolytic artifacts in the baculovirus expression system.

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