IFN-gamma Protein, Feline

Cat. No.:	HY-P79280
Synonyms:	Interferon-gamma; Interferon-γ; Interferon gamma
Species:	Others
Source:	E. coli
Accession:	P46402 (Q24-K167)
Gene ID:	493965
Molecular Weight:	Approximately 17.1 kDa

PROPERTIES

AA Sequence	QAMFFKEIEE LKGYFNASNP DVADGGSLFV DILKNWKEES DKTIIQSQIV SFYLKMFENL KDDDQRIQRS MDTIKEDMLD KLLNTSSSKR DDFLKLIQIP VNDLQVQRKA INELFKVMND LSPRSNLRKR KRSQNLFRGR RASK
Biological Activity	1.Measured in an anti-viral assay using CRFK feline kidney epithelial cells infected with vesicular stomatitis virus (VSV). The ED_{50} for this effect is 0.15-0.9 ng/mL. 2.Measured by its ability to inhibit the proliferation of HT-29 human coloncancer cells. The ED_{50} for this effect is 0.1612 ng/mL, corresponding to a specificactivity is $6.203×10^6$ Unit/mg.
Appearance	Lyophilized powder
Formulation	Lyophilized from sterile 50 mM Tris-HCL, 300 mM NaCl, pH 7.5.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 50 μg/mL in ddH$_2$O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	IFN-gamma (Interferon-gamma), a type II interferon produced by immune cells such as T-cells and NK cells, assumes crucial roles in antimicrobial, antiviral, and antitumor responses by activating effector immune cells and enhancing antigen presentation. Its primary signaling occurs through the JAK-STAT pathway after interaction with its receptor IFNGR1,

influencing gene regulation. Upon IFN-gamma binding, the IFNGR1 intracellular domain opens out, facilitating the association of downstream signaling components, including JAK2, JAK1, and STAT1, leading to STAT1 activation, nuclear translocation, and transcription of IFNG-regulated genes. Many of the induced genes are transcription factors, such as IRF1, capable of further driving the regulation of a subsequent wave of transcription. IFN-gamma plays a role in the class I antigen presentation pathway by inducing a replacement of catalytic proteasome subunits with immunoproteasome subunits, thereby increasing the quantity, quality, and repertoire of peptides for class I MHC loading. It enhances the efficiency of peptide generation by inducing the expression of the activator PA28, which associates with the proteasome and alters its proteolytic cleavage preference. Additionally, IFN-gamma up-regulates MHC II complexes on the cell surface by promoting the expression of several key molecules, such as cathepsins B/CTSB, H/CTSH, and L/CTSL, contributing to immune responses. Participating in the regulation of hematopoietic stem cells during development and under homeostatic conditions, IFN-gamma influences their development, quiescence, and differentiation. Existing as a homodimer, IFN-gamma interacts with IFNGR1 via its extracellular domain, a crucial interaction that promotes IFNGR1 dimerization, orchestrating its diverse and critical functions in immune responses and hematopoiesis.