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Insulin In Vitro Transcribed mRNA-LNP

Catalog Number:SG-MRNA-LNP-1866

DESCRIPTION	
Product Name	Insulin In Vitro Transcribed mRNA-LNP
Gene Name	Insulin
Source	The ORF of Insulin was cloned in our IVT vector and mRNA was prepared through in vitro transcription and purification. The purified mRNA was further encapsulated with LNP(DSPC:Cholesterol:DMG-PEG:SM102).
Alternative names	Insulin
SPECIFICATIONS	
Cap	m7GpppN
5'-UTR	5' -untranslated region derived from human alpha-globin RNA with an optimized Kozak sequence
ORF	Insulin
3'-UTR	3' UTR comprising two sequence elements derived from the aminoterminal enhancer of split (AES) mRNA and the mitochondrial encoded 12S ribosomal RNA
Poly(A) Tail	A 110-nucleotide poly(A)-tail consisting of a stretch of 30 adenosine residues, followed by a 10-nucleotide linker sequence and another 70 adenosine residues.
Modifications	N1-methyl-pseudouridine
Neutral Lipid	1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC)
Cholesterol	Cholesterol
Lonizable Lipid	1,2-dimyristoyl-rac-glycero-3-methoxypolyethylene glycol-2000 (PEG2000-DMG)
PEG-lipid	Heptadecan-9-yl 8-((2-hydroxyethyl)(8-(nonyloxy)−8-oxooctyl)amino)octanoate)(SM-102)
Storage	-20 °C
Buffer	PBS, pH7.4
Cryoprotectant	Trehalose
BACKGROUND	
Gene Accession	
Gene Alias	Insulin

	covalently linked by disulfide bonds. Insulin is an important treatment in the management of Type 1 Diabetes (T1D) which is caused by an autoimmune reaction that destroys the beta cells of the pancreas, resulting in the body not being able to produce or synthesize the insulin needed to manage circulating blood sugar levels. As a result, people with T1D rely primarily on exogenous forms of insulin to lower glucose levels in the blood. Insulin is also used in the treatment of Type 2 Diabetes (T2D), another form of diabetes mellitus that is a slowly progressing metabolic disorder caused by a combination of genetic and lifestyle factors that promote chronically elevated blood sugar levels. Without treatment or improvement in non-pharmacological measures such as diet and exercise to lower blood glucose, high blood sugar eventually causes cellular resistance to endogenous insulin, and in the long term, damage to pancreatic islet cells. Insulin is typically prescribed later in the course of T2D, after trying several oral medications such as Metformin, Gliclazide, or Sitagliptin have been tried, when sufficient damage has been caused to pancreatic cells that the body is no longer able to produce insulin on its own.
Background	Human Insulin is a 51 residue peptide hormone produced by recombinant DNA technology by inserting the human insulin gene into Escherichia coli bacteria or Saccharomyces cerevisiae. The structure is identical to native human insulin, with two amino acid chains