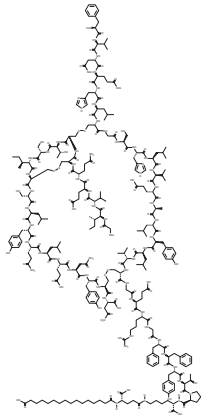
PRODUCT INFORMATION

Insulin degludec

Item No. 46122



CAS Registry No.:	844439-96-9
Formal Name:	29^{B}-[N^{6}-[N-(15-carboxy-1 oxopentadecyl)-L-γ-glutamyl]-L-lysine]-(1^{A}-21^{A}),(1^{B}-29^{B})-insulin (human)
Synonym:	IDeg
MF:	$C_{274}H_{411}N_{65}O_{81}S_{6}$
FW:	6,104.0
Purity:	≥98%
Supplied as:	A solid
Storage:	-20°C
Stability:	≥4 years

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Insulin degludec is supplied as a solid. A stock solution may be made by dissolving the insulin degludec in the solvent of choice, which should be purged with an inert gas. Insulin degludec is slightly soluble (0.1-1 mg/ml) in methanol and a 1:1 solution of acetonitrile:water.

Description

Insulin degludec is a derivative of insulin that lacks the Thr^{B30} residue and is acylated at the Lys^{B29} residue with hexadecanedioic acid *via* a γ-L-glutamic acid linker.[1] It binds insulin receptors in CHO cell plasma membrane preparations (IC_{50} = 20 nM).[2] Insulin degludec increases the level of phosphorylated Akt in HL-1 mouse cardiomyocytes and primary rat cortical neuronal cells and increases glucose uptake in HL-1 cardiomyocytes.[2,3] It increases positive inotropic activity in primary adult rat ventricular myocytes (ARVMs) and inhibits apoptosis induced by hydrogen peroxide (H_2O_2) in H9c2(2-1) rat cardiac cells.[2] Insulin degludec decreases fasting blood glucose levels and increases body weight in a mouse model of type 1 diabetes (T1D) induced by alloxan (Item No. 9002196).[4] It reduces liver glucose, lactate, and pyruvate levels and does not change serum aspartate aminotransferase (AST) or alanine transaminase (ALT) levels in an alanine-stimulated mouse model of T1D and insulin-induced hypoglycemia. Formulations containing insulin degludec have been used in the treatment of type 1 and type 2 diabetes.

References

1. Jonassen, I., Havelund, S., Hoeg-Jensen, T., *et al.* Design of the novel protraction mechanism of insulin degludec, an ultra-long-acting basal insulin. *Pharm. Res.* **29(8)**, 2104-2114 (2012).
2. Hartmann, T., Overhagen, S., Ouwens, D.M., *et al.* Effect of the long-acting insulin analogues glargine and degludec on cardiomyocyte cell signalling and function. *Cardiovasc. Diabetol.* **15**, 96 (2016).
3. Tsuneki, H., Yoshida, H., Endo, K., *et al.* Different impacts of acylated and non-acylated long-acting insulin analogs on neural functions in vitro and in vivo. *Diabetes Res. Clin. Pract.* **129**, 62-72 (2017).
4. Bataglini, C., Ramos Mariano, I., Azevedo, S.C.F., *et al.* Insulin degludec and glutamine dipeptide modify glucose homeostasis and liver metabolism in diabetic mice undergoing insulin-induced hypoglycemia. *J. Appl. Biomed.* **19(4)**, 210-219 (2021).

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

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