# Insulin Detemir

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| **Cat. No.:** | HY-109556 |
| **CAS No.:** | 169148-63-4 |
| **Molecular Formula:** | $C_{267}H_{402}N_{64}O_{76}S_6$ |
| **Target:** | Akt; ERK |
| **Pathway:** | PI3K/Akt/mTOR; MAPK/ERK Pathway; Stem Cell/Wnt |
| **Storage:** | Pure form -20°C 3 years<br>4°C 2 years<br>In solvent -80°C 6 months<br>-20°C 1 month |

## BIOLOGICAL ACTIVITY

**Description**

Insulin Detemir is an artificial insulin, shows effect on controlling blood sugar levels. Insulin Detemir stimulates GLP-1 secretion as a consequence of enhanced Gcg expression by a mechanism involving activation of Akt- and/or extracellular signal-regulated kinase (ERK)-dependent-cat and CREB signaling pathways. Insulin Detemir can be used for type 2 diabetes research[1][2].

**In Vitro**

Insulin Detemir (d-INS) (100 nM; 0.5-4 h) increases Gcg mRNA expression in primary fetal rat intestinal cell (FRIC) cultures, and (100 nM; 5 min and 10 min) induces rapid phosphorylation of Akt, as well[1].

Insulin Detemir (100 nM; 5-120 min) increases β-catenin phosphorylation, its nuclear translocation, and enhances cAMP response element-binding protein (CREB) phosphorylation in a phosphatidylinositol 3-kinase and/or mitogen-activated protein kinase kinase/extracellular signal-regulated kinase-sensitive manner[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

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| Cell Line: | GLUTag cells |
| Concentration: | 100 nM |
| Incubation Time: | 0, 5, 10, 30, 60, and 120 min |
| Result: | Stimulated CREB, ERK1/2, Akt and its downstream glycogen synthase kinase (GSK)-3 phosphorylation at 5 min and 10 min. |

**In Vivo**

Insulin Detemir (d-INS) (5 IU/kg; i.p.; once daily; 2 weeks) demonstrates weight-sparing effects compared with other insulin formulations, and shows a intestinal tissues preference, potentially involving the activation of insulin/-catenin/CREB signaling pathways[1].

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| Animal Model: | Obese type 2 diabetic db/db mice[1] |
| Dosage: | 5 IU/kg |
| Administration: | Intraperitoneal injection; once daily for 2 weeks |

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| Result: | Decreased body weight of the mice after 14-day daily injection of d-INS (5 IU/kg) significantly compared with those injected with the same dose of human Insulin or saline. Induced rapid phosphorylation of protein kinase B (Akt) in the gut L cells of normal mice. |

## REFERENCES

[1]. Liu S, et al. Insulin detemir enhances proglucagon gene expression in the intestinal L cells via stimulating β-catenin and CREB activities. Am J Physiol Endocrinol Metab. 2012 Sep 15;303(6):E740-51.



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