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Insulin Degludec

National Cancer Institute

Source

National Cancer Institute. *Insulin Degludec*. NCI Thesaurus. Code C142979.

A recombinant, long-acting analog of human insulin, with blood glucose-lowering activity. Upon subcutaneous injection, insulin degludec forms a multi-hexameric depot from which insulin monomers are slowly released into the systemic circulation. Insulin regulates glucose metabolism by binding to insulin receptors on muscle and fat cells, which stimulates the cellular uptake of glucose and lowers blood glucose levels. Insulin inhibits the liver's conversion of stored glycogen into glucose, which also contributes to lower blood glucose levels. In addition, insulin inhibits lipolysis in adipose tissue, inhibits proteolysis, and enhances protein synthesis. Insulin degludec doesn't contain the amino acid threonine that is found at position B30 in human insulin; additionally, the lysine at position B29 is conjugated to hexadecanedioic acid, which allows the formation of the multi-hexamers upon subcutaneous injection. The phenol and zinc present in the pharmaceutical formulation promote a di-hexameric state of insulin degludec.