

ABSTRACT OF THE DISCLOSURE

Provided are an insulin conjugate having improved insulin receptor binding affinity and increased activity, in which a non-peptidyl polymer and an immunoglobulin Fc region are site-specifically linked to an amino acid residue of the insulin beta chain excluding the N-terminus thereof via a covalent bond, a long-acting formulation including the same, and a preparation method thereof. The insulin conjugate of the present invention is used to provide an insulin formulation which exhibits a remarkably increased in vivo activity of the peptide.