

Incretin-Based Drugs

Updated: January 3, 2018.

OVERVIEW

The incretins are gastrointestinal polypeptide hormones that act to modulate insulin secretion from pancreatic beta cells. These hormones include glucagon-like peptide-1 (GLP-1) and gastric inhibitory peptide (GIP), and they are secreted from the upper gastrointestinal tract in response to feeding. They act on the pancreas, causing insulin release even before blood glucose levels are elevated. Both hormones are polypeptides that are rapidly cleared from the serum by the enzyme dipeptidyl peptidase-4 (DPP-4). The incretin pathway provides several potential targets for therapy of type 2 diabetes, the main ones being DPP-4 inhibitors and GLP-1 analogues. These incretin-based hypoglycemic agents are relatively new and they have not been implicated as common causes of drug induced liver injury. These two groups of incretin-based drugs are quite different in chemical structure, pharmacology and safety profile and are discussed separately.

Drug Class: [Antidiabetic Agents](#)

Drugs in the Subclass, Incretin-Based Drugs:

- Dipeptidyl Peptidase-4 (DPP-4) Inhibitors
 - Alogliptin
 - Linagliptin
 - Saxagliptin
 - Sitagliptin
- Glucagon-Like Peptide-1 (GLP-1) Analogues
 - Albiglutide
 - Dulaglutide
 - Exenatide
 - Liraglutide
 - Lixisenatide
 - Semaglutide

CHEMICAL FORMULAS AND STRUCTURES

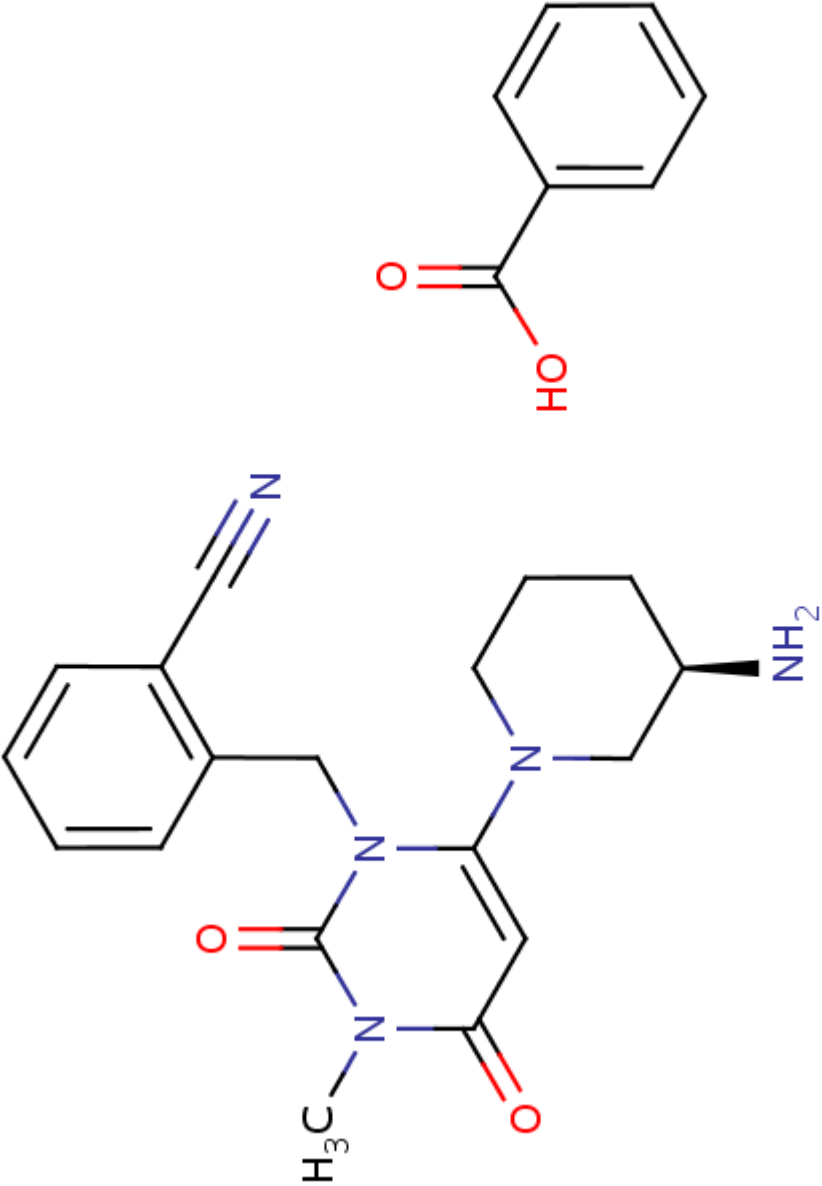
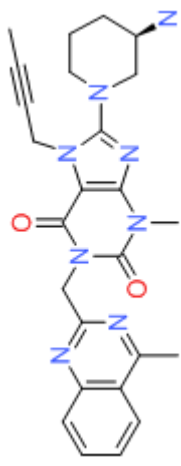
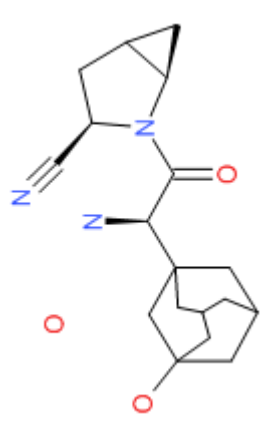
DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Alogliptin	850649-62-6	C ₁₈ -H ₂₁ -N ₅ -O ₂ .C ₇ -H ₆ -O ₂	 <p>The image displays the chemical structure of Alogliptin, a dipeptidyl peptidase-4 inhibitor. The structure is a complex molecule consisting of a central pyridine ring substituted with a methyl group (H₃C), a benzamide group, and a piperidine ring. The piperidine ring is further substituted with a primary amine group (NH₂). The benzamide group is substituted with a 2-cyano-1-phenylethyl group. The carboxylic acid group (HO-C=O) of the 2-cyano-1-phenylethyl group is highlighted in red in the original image.</p>

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Linagliptin	668270-12-0	C25-H28-N8-O2	
Saxagliptin	945667-22-1	C18-H25-N3-O2.H2O	
Sitagliptin	486460-32-6	C16-H15-F6-N5-O	