

Antidiabetic Agents

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Diabetes mellitus

It is a metabolic disorder characterized by hyperglycemia, glycosuria, hyperlipemia, negative nitrogen balance and ketonemia.

Types:

Type-I: Insulin dependant diabetes mellitus (IDDM).

Juvenile onset diabetes mellitus

- β cells in pancreas are destroyed due to autoimmune disease. Circulation insulin levels are low.

Type-II: Non insulin dependent diabetes mellitus
(NIDDM)

Maturity onset diabetis mellitus

- Abnormality in gluco-receptor of β cells of pancrease so that they respond at higher glucose concentration.
- Reduction in number of insulin receptor/ insulin resistance of insulin receptor.

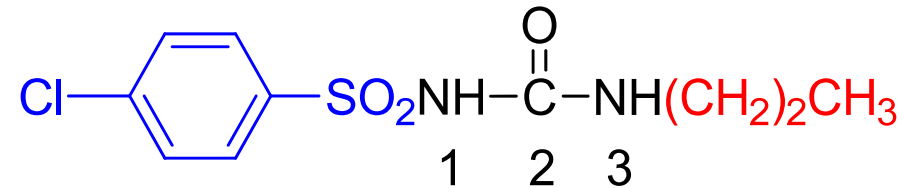
These are the drugs which lower blood glucose levels when taken orally.

Classification:

oral hypoglycaemic agents are chemically classified into different classes.

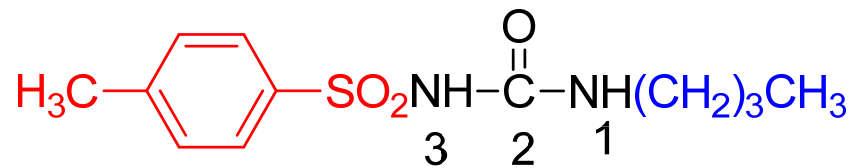
➤ Sulfonylurea derivatives

• First generation:



Chlorpropamide

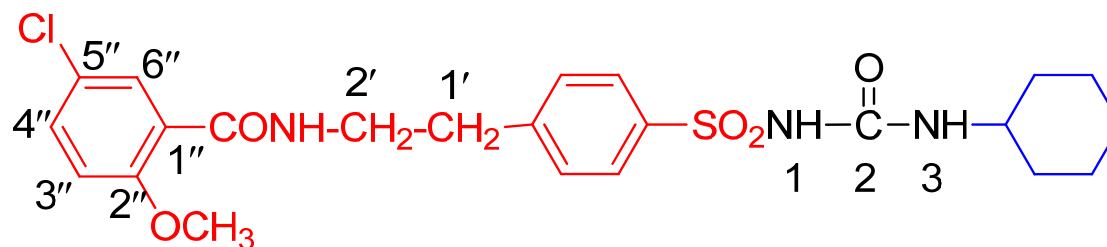
1-(p-chlorophenylsulfonyl)-3-propylurea



Tolbutamide

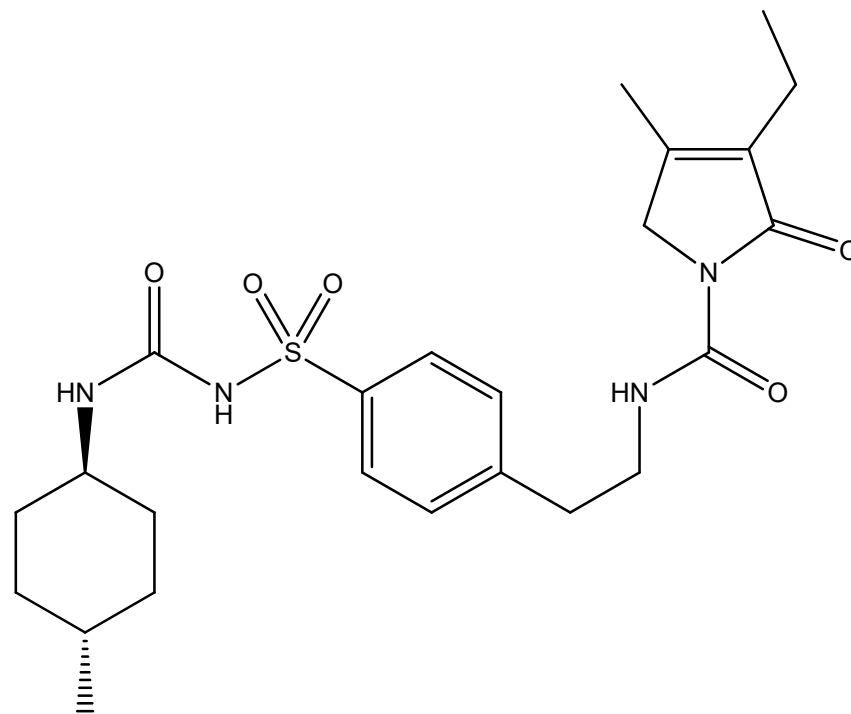
IUPAC: 1-butyl-3-p-toluenesulfonylurea

•Second generation:



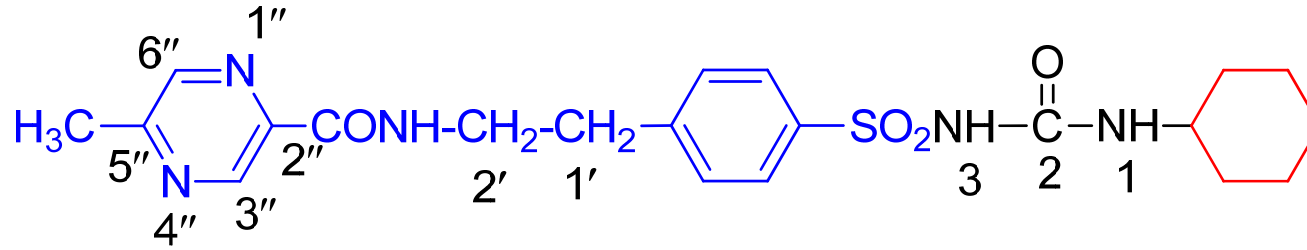
Glibenclamide

IUPAC: 1-((p-(2'-(5''-chloro-o-anisamido)ethyl)phenyl)sulfonyl)-3-cyclohexylurea



Glimepiride

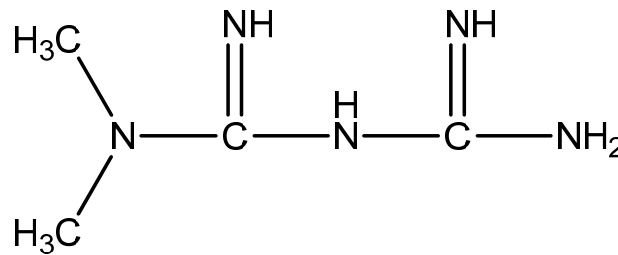
IUPAC: 3-ethyl-4-methyl-2-oxo-N-(2-{4-[({(1R,4R)-4-methylcyclohexyl}carbamoyl} amino)sulfonyl]phenyl} ethyl)-2,5-dihydro-1H-pyrrole-1-carboxamide



Glipizide

IUPAC: 1-cyclohexyl-3-[[p-[2'-(5''-methyl pyrazincarboxamido) ethyl]phenyl] sulfonyl]urea

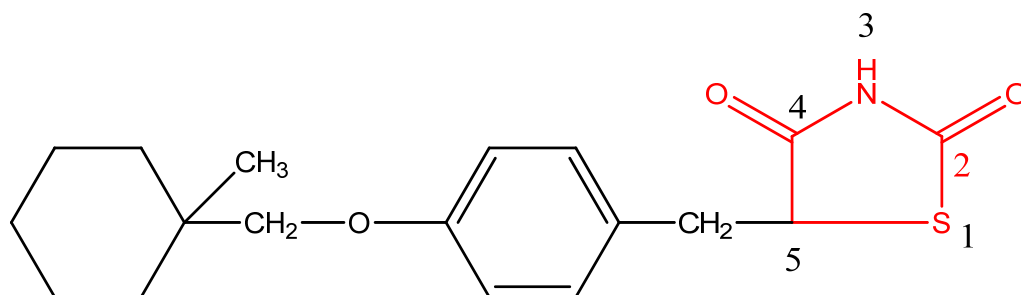
➤ Biguanides



Metformin

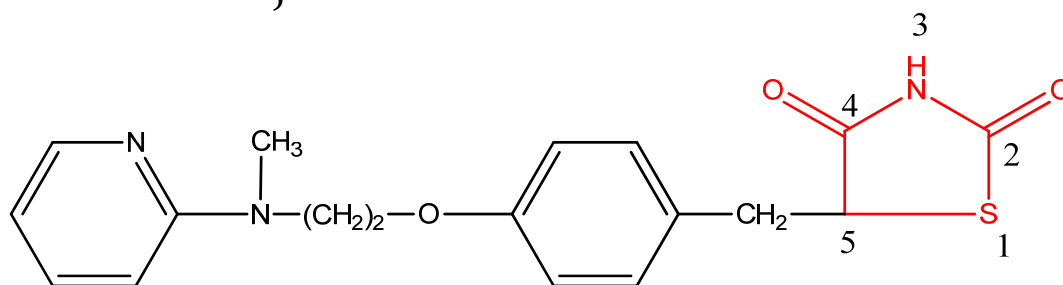
1,1-Dimethylbiguanide

➤ Thiazolidinediones



Ciglitazone

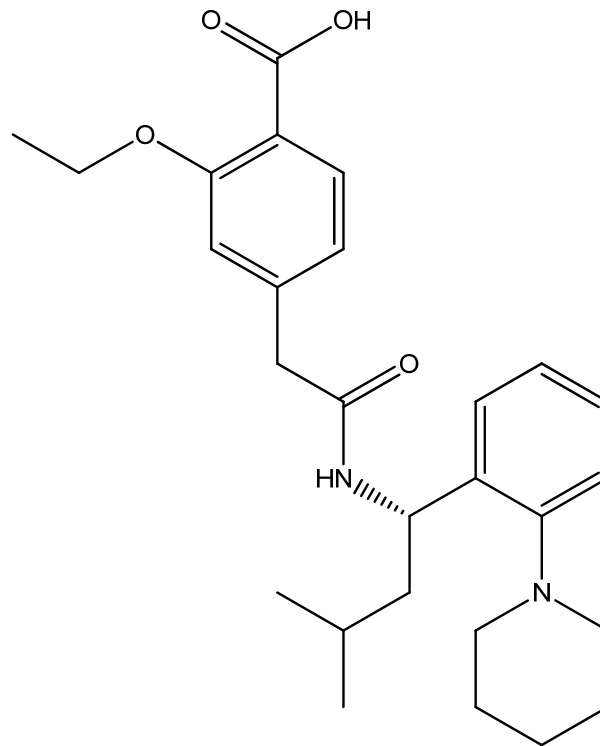
5-[[4-[(1-methylcyclohexyl)methoxy]phenyl]methyl]-
1,3-thiazolidine-2,4-dione



Rosiglitazone

5-(4-(2-(Methyl(pyridin-2-yl)amino)ethoxy)benzyl)
thiazolidine-2,4-dione

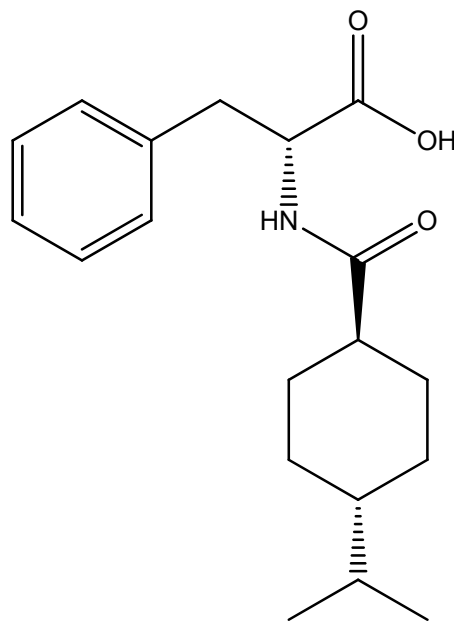
➤ Meglitinides



Repaglinide

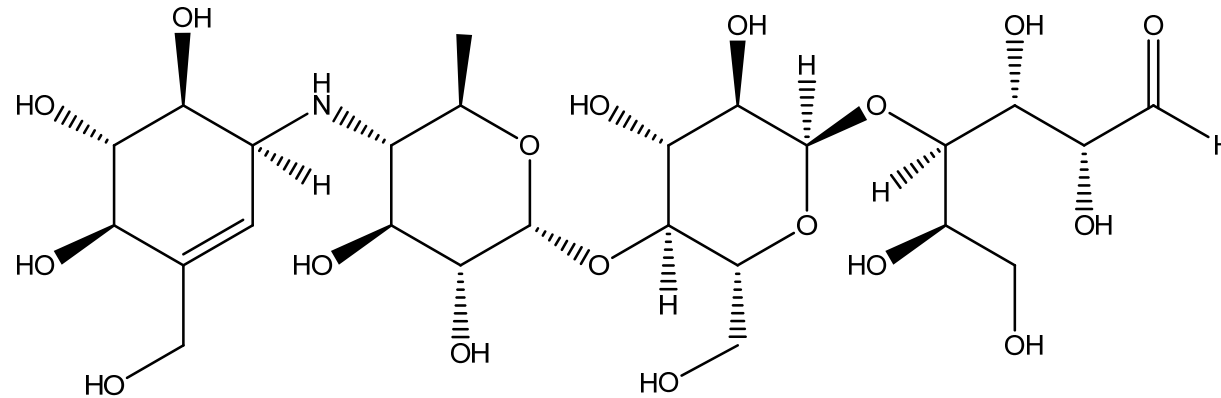
2-ethoxy-4-({[(1S)-3-methyl-1-[2-(piperidin-1-yl)phenyl]butyl]carbonyl} methyl)benzoic acid

Nateglinide



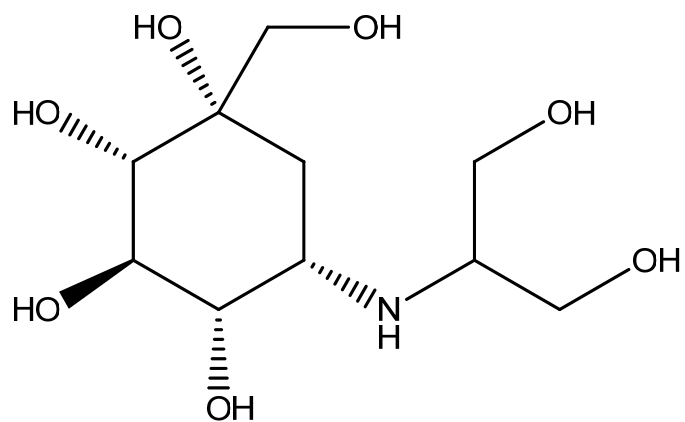
(2R)-3-phenyl-2- {[[(1r,4r)-4-(propan-2-yl)cyclohexyl]formamido} propanoic acid

➤ Glucosidase inhibitors



Acarbose

(2R,3R,4R,5R)-4- {[(2R,3R,4R,5S,6R)-5- {[(2R,3R,4S,5S,6R)-3,4-dihydroxy-6-methyl-5- {[(1S,4R,5S,6S)-4,5,6-trihydroxy-3-(hydroxymethyl)cyclohex-2-en-1-yl]amino} oxan-2-yl]oxy} -3,4-dihydroxy-6-(hydroxymethyl)oxan-2-yl]oxy} -2,3,5,6-tetrahydroxyhexanal



Voglibose

(1S,2S,3R,4S,5S)-5-[(1,3-dihydroxypropan-2-yl)amino]-1-(hydroxymethyl)cyclohexane-1,2,3,4-tetrol