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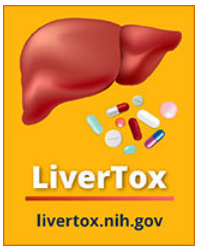

Antidiabetic Agents

Updated: June 6, 2017.

OVERVIEW

Management and treatment of diabetes usually begins with advice on diet and exercise. Insulin is the therapeutic mainstay of therapy of type 1 diabetes, whereas agents that increase insulin secretion or activity are the primary approaches to therapy of type 2 diabetes. First line conventional therapies for type 2 diabetes include biguanides (metformin) and sulfonylureas. Metformin increases insulin sensitivity whereas the sulfonylureas increase insulin secretion. More recently developed agents include alpha glucosidase inhibitors, thiazolidinediones, metiglidine analogues and drugs that affect the incretin system. Alpha glucosidase inhibitors act in the gastrointestinal tract to decrease glucose absorption. The thiazolidinediones affect multiple intracellular metabolic pathways that increase insulin actions and improve insulin sensitivity. Metiglidines, like the sulfonylureas, increase insulin secretion. Finally, drugs that affect the incretin system include analogues of glucagon-like peptide-1 (GLP-1) that promote early insulin release from the pancreas and inhibitors of dipeptiyl peptidases 4 (DPP-4) that prolong the activity of GLP-1 in the serum. A relatively new category of antidiabetic agents are inhibitors of the sodium glucose cotransporter-2 (SGLT2), which is responsible for reabsorption of glucose in the kidney; inhibition of this transporter causes glucosuria and can reduce hyperglycemia in patients with diabetes. The first commercially available SGLT2 inhibitors (canagliflozin and dapagliflozin) were approved for use in the United States in 2013. Most antidiabetic agents have minimal adverse effects on the liver and have only rarely been linked to instances of clinically apparent acute liver injury.

- Insulin
- Metformin
- Metiglinide Analogues
  - Nateglinide
  - Repaglinide
- Pramlintide
- Sodium Glucose Cotransporter-2 (SGLT2) Inhibitors
  - Bexagliflozin
  - Canagliflozin
  - Dapagliflozin
  - Empagliflozin
  - Ertugliflozin
- Sulfonylureas
  - First Generation Sulfonylureas
    - Acetohexamide
    - Chlorpropamide
    - Tolazamide
    - Tolbutamide
  - Second Generation Sulfonylureas
    - Gliclazide
    - Glimepiride
    - Glipizide
    - Glyburide (Glibenclamide)
- Thiazolidinediones
  - Pioglitazone
  - Rosiglitazone
  - Troglitazone
- Miscellaneous
  - Teplizumab

Updated: February 22, 2023

ANNOTATED BIBLIOGRAPHY

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(Among 899 cases of drug induced liver injury in the US collected between 2004 and 2012, 4 cases were attributed to drugs used for diabetes [metformin, glyburide, sitagliptin], but no cases were attributed to acarbose or a thiazolidinedione).

Drugs for type 2 diabetes. Med Lett Drugs Ther. 2017;59(1512):9–18. PubMed PMID: 28076339.

(Concise summary of the mechanisms of action, efficacy, safety and costs of currently available drugs for type 2 diabetes; mentions that serum enzyme elevations can occur with acarabose therapy and that hepatitis and liver failure have been described with thiazolidinedione and DDP-4 inhibitor therapy).