Brand: Glydap-M

Generic Name: Dapagliflozin 10 mg + Metformin (Extended Release) 500 mg

(Fixed-dose combination)

Dosage Form: Oral Tablet

Composition of Glydap-M:

- **Dapagliflozin: 10 mg**
- **Metformin Hydrochloride (Extended Release): 500 mg**

The combination of Dapagliflozin and Metformin in Glydap-M is used primarily in the management of type 2 diabetes to help control blood glucose levels through different mechanisms. Each drug works through unique pathways that complement each other for more effective glucose control.

1. Dapagliflozin (SGLT2 Inhibitor) MOA:

- **Mechanism: Dapagliflozin is a Sodium-Glucose Cotransporter-2 (SGLT2) inhibitor. SGLT2 is a protein in the kidneys that is responsible for reabsorbing glucose from the urine back into the bloodstream.**
- **Action: By inhibiting SGLT2, dapagliflozin prevents glucose reabsorption from the proximal tubules of the kidneys, leading to an increase in glucose excretion in the urine.**
- **Effect: This lowers blood glucose levels by reducing the amount of glucose returned to the bloodstream, helping to control hyperglycemia. Additionally, the increased glucose excretion also promotes weight loss and may have beneficial effects on cardiovascular health.**

2. Metformin (Biguanide) MOA:

- **Mechanism: Metformin primarily works by increasing insulin sensitivity and reducing liver glucose production (hepatic gluconeogenesis). It does not directly stimulate insulin secretion.**
- **Action:**
    - **Liver: Metformin inhibits the production of glucose in the liver by suppressing gluconeogenesis (the process by which the liver produces glucose from non-carbohydrate sources like amino acids and lactate).**
    - **Muscles and Fat: It also increases insulin sensitivity in peripheral tissues, such as muscle and adipose tissue, improving glucose uptake from the bloodstream.**
    - **Gut: Metformin has a minor effect on reducing glucose absorption in the intestines, which also helps reduce postprandial glucose spikes.**
- **Effect: The combination of reducing glucose production in the liver, improving peripheral insulin sensitivity, and slightly decreasing intestinal glucose absorption helps to lower fasting blood glucose and postprandial glucose levels.**

Combined Mechanism of Action (MOA):

- **Dapagliflozin works by increasing urinary glucose excretion, thereby lowering blood glucose levels.**
- **Metformin works by reducing liver glucose production, improving insulin sensitivity, and reducing glucose absorption from the intestine.**

Together, these two drugs offer complementary mechanisms to lower blood glucose levels in people with type 2 diabetes:

- **Dapagliflozin addresses glucose excess by removing it from the body via urine.**
- **Metformin addresses glucose production and insulin resistance.**

Summary:

- **Dapagliflozin (SGLT2 inhibitor) reduces blood glucose by increasing urinary glucose excretion.**
- **Metformin (Biguanide) lowers blood glucose by reducing hepatic glucose production and improving insulin sensitivity.**

This combination is effective in controlling both fasting and postprandial blood glucose levels and provides a multifaceted approach to managing type 2 diabetes.

Indications:

- **Dapagliflozin 10 mg + Metformin (ER) 500 mg is indicated for the treatment of type 2 diabetes mellitus:**
    - **To improve glycemic control in adult patients, along with diet and exercise.**
    - **In patients who are inadequately controlled on Metformin alone or Dapagliflozin alone.**
    - **Can be used as part of a treatment regimen with other antidiabetic agents, including insulin, if needed.**

Dosage and Administration: Glydap-M

- **Starting dose: One tablet of Dapagliflozin 10 mg + Metformin (ER) 500 mg once daily, taken with food to reduce gastrointestinal side effects.**
- **Dose titration: Based on individual patient response, the dose may be increased. The maximum recommended dose is Dapagliflozin 10 mg + Metformin (ER) 1000 mg once daily.**
- **Administration: Take the tablet with the evening meal. The tablet should be swallowed whole; do not crush or chew.**
- **Renal function monitoring: Renal function should be assessed before initiation and regularly during treatment, especially since Metformin is contraindicated in severe renal impairment.**

Contraindications: Glydap-M

- **Hypersensitivity to Dapagliflozin, Metformin, or any component of the formulation.**
- **Severe renal impairment (e.g., eGFR < 30 mL/min/1.73 m^2).**
- **Acute or chronic metabolic acidosis, including diabetic ketoacidosis.**
- **Diabetic ketoacidosis or a history of lactic acidosis.**
- **Severe hepatic impairment.**
- **Pregnancy and breastfeeding (due to unknown effects on the fetus and infants).**
- **Hypovolemia or dehydration (Dapagliflozin can increase the risk of dehydration).**

Warnings and Precautions:

- **Lactic acidosis: A rare but serious complication associated with Metformin use. It is more likely in patients with renal impairment, dehydration, alcohol abuse, and liver disease. Immediate discontinuation of Metformin is required if lactic acidosis is suspected.**
- **Renal impairment: Dapagliflozin is contraindicated in patients with severe renal impairment. Regular monitoring of kidney function is advised.**
- **Hypotension: Dapagliflozin can cause a decrease in blood pressure, especially in patients who are volume-depleted or on antihypertensive medication.**
- **Genital infections: Dapagliflozin may increase the risk of genital fungal infections and urinary tract infections.**
- **Ketoacidosis: Risk of diabetic ketoacidosis (DKA), particularly in type 2 diabetes patients.**
- **Pancreatitis: Monitor for signs of pancreatitis as it may occur in patients taking SGLT2 inhibitors (such as Dapagliflozin).**

Drug Interactions:

- **Dapagliflozin: Care should be taken when co-administering with diuretics, RAAS inhibitors, or medications that can lower blood pressure (such as ACE inhibitors or ARBs), as this may increase the risk of dehydration and hypotension.**
- **Metformin: May interact with iodinated contrast media, corticosteroids, diuretics, and other agents that can affect renal function. Discontinue Metformin before and after receiving iodinated contrast media if the patient has compromised renal function.**
- **Other antidiabetic agents: If used in combination with insulin or sulfonylureas, monitor for the risk of hypoglycemia.**

Side Effects:

Common side effects:

- **Dapagliflozin: Urinary tract infections, genital fungal infections, increased urination, dehydration, hypotension.**
- **Metformin (ER): Gastrointestinal side effects (nausea, diarrhea, abdominal discomfort), flatulence, and reduced appetite.**

Serious side effects:

- **Lactic acidosis (due to Metformin), a rare but potentially fatal condition.**
- **Ketoacidosis, pancreatitis, and risk of acute kidney injury.**
- **Hypotension due to fluid loss, particularly in patients on diuretics or those with renal impairment.**

Use in Specific Populations:

- **Pregnancy: Not recommended during pregnancy. Alternative treatment with insulin is usually preferred for managing blood sugar during pregnancy.**
- **Breastfeeding: Not recommended, as it is unknown whether Dapagliflozin or Metformin are excreted in breast milk.**
- **Pediatrics: Safety and effectiveness in children have not been established.**
- **Geriatrics: Elderly patients may be more sensitive to the effects of Metformin, particularly those with reduced renal function.**
- **Renal impairment: Contraindicated in patients with severe renal impairment (eGFR < 30 mL/min/1.73 m^2). Caution is required for patients with moderate renal impairment (eGFR 30-59 mL/min/1.73 m^2), and dosing adjustments may be necessary.**

Overdose:

- **Dapagliflozin: Overdose may result in an increased risk of dehydration, hypotension, and renal impairment. Treatment is supportive, and symptomatic treatment should be provided.**
- **Metformin: Overdose of Metformin can lead to lactic acidosis, a medical emergency. In case of overdose, immediate medical attention is required. Hemodialysis may be necessary to clear Metformin from the bloodstream.**

Storage:

- **Store at room temperature (15°C to 30°C / 59°F to 86°F).**
- **Keep the medication in its original container, tightly closed, and out of reach of children.**

Packaging:

- **Each Alu-Alu strip of Glydap-M contains 10 tablets.**
- **Each box of Glydap-M contains 10 strips.**

Note: This summary provides general prescribing information.