Digoxin is a drug that belongs to a group of drugs called cardiac glycosides. It has a positive inotropic (increases the strength of your heart) and negative chronotropic effect (slows down your heart rate). It is used in the treatment of chronic heart failure and atrial fibrillation.

The mechanism of action is based on increasing levels of intracellular calcium which increases the contractility of the heart muscle, but it also increases the risk of tachycardia.1

Because of its very narrow therapeutic index, its use is decreased over the last ten years.

Contraindications and precautions

Digoxin is contraindicated in the following conditions:

- In patients with chronic obstructive cardiomyopathy
- In patients with atrioventricular block
- In patients with ventricular fibrillation
- In patients who are allergic to cardiac glycosides

Digoxin should be administered with caution in the following conditions:

- If you have had a recent myocardial infarction
- If you have lung disease
- If you have a deficiency of vitamin B1
- If you have kidney damage (most of this drug is removed from the body by the kidneys, and
patients with kidney damage will have prolonged digoxin elimination from the body

- If you have an electrolyte disorders (hypokalemia, hypercalcemia, hypomagnesemia)

### Digoxin, pregnancy and breastfeeding

According to the US FDA, this drug is classified in the group C, which means that studies in animals have shown that this drug exerts toxic effects on the fetus, but there are insufficient data on the safety of this drug in human pregnancy. According to the Australian TGA this drug is classified in group A - drugs for which there is sufficient data to support their safety during pregnancy. Consult with your doctor before you start to apply his drug during pregnancy or breastfeeding.

### Dosage

**The dosage for patients older than 10 years**

**Initial dose:** 0.75-1.5 mg daily  
**Maintenance dose:** 0.125-0.25 mg daily

**The dosage for children under the age of 10**

**Initial dose:** 0.025-0.045 mg / kg  
**Maintenance dose:** 0.005-0.009 mg / kg

Digoxin has a narrow therapeutic index which means that there is a small difference between therapeutic and toxic doses. Therefore, never take higher dose than recommended by your doctor.

### Overdose

Intoxication with this drug leads to the following symptoms:

- Anorexia
- Nausea
- Vomiting
- Neurological symptoms
- Arrythmias *(which may be fatal)*
- Hypomagnesaemia
- Hypokalemia

If you take larger dose than you doctor has recommended, hospitalization and eventual application of digoxin-specific antibody fragments is required. It is necessary to correct the hypokalemia and hypomagnesaemia prior to the application of these antibodies.

### Interactions

Digoxin should not be used in combination with the following drugs:

- **Antacids** that contain aluminum and magnesium *(e.g. Maalox)*. These drugs reduce the
absorption of this drug for which can reduce its efficacy
- Drugs used to treat asthma
- Drugs used to treat high blood pressure or arrhythmia
- Drugs used to treat epilepsy
- Anti-cancer drugs
- Lipid-lowering drugs
- Laxatives
- Antibiotics
- Antifungal medications
- Immunosuppressive agents
- Corticosteroids
- Benzodiazepines
- Anesthetics
- Vitamin D
- St. John's Wort

## Adverse reactions

Digoxin may cause the following adverse reactions:
- Dizziness
- Painful palpitations
- Difficulty breathing
- Irregular heartbeat
- Gynecomastia in men
- Weakness
- Increased sweating
- Loss of appetite
- Confusion

## References

1. NCBI link