

Hepatoprotective

Hepatoprotectants are substances with (potentially) **regenerative and protective effects** on the liver cells. It is one of the frequently prescribed medicines. They are generally readily available and many are available without a prescription.

Indication

The general indication for prescription is various liver damage. Among the most common are chronic alcoholism, hepatitis or overdose with hepatotoxic substances. They can also be administered to patients with elevated aminotransferase values, in whom we do not know the cause of their elevation.

Silibinin

It blocks the transport system of the cell and reduces the extent of necrosis. It also has a **regenerative effect** and stimulates RNA polymerase. It is contained in the seeds of a plant called "Marian's milk thistle" and can be purchased freely in the form of loose tea. It is a popular tea for people with damaged livers, as it significantly lowers the level of aminotransferases and stabilizes the damaged metabolic function of the hepatocyte. It was found that the more bioavailable injectable forms of silibinin were able to protect the liver even against such strongly hepatotoxic substances as phalloidin and amanitin (alkaloids of the toadstool green). The disadvantage of silibinin is its low bioavailability and therefore it is slightly absorbed from the GIT. Bioavailability can be enhanced (up to 10-fold) by co-administration with phosphatidylcholine. In case of amatoxin poisoning, we administer 20 mg/kg/day i.v. for 3-5 days.

Silymarin

It has a smaller hepatoprotective effect than the aforementioned silibinin. It is also contained in the seeds of the milk thistle.

Phosphatidylcholine (lecithin)

It is the **most important phospholipid**, which is derived from phosphatidic acid, to whose phosphate group choline is bound. It is extremely important **for the formation of the double layer' biological membrane**. The logic of administration is conditioned by the fact that if we administer a substrate (= phosphatidylcholine) for membrane formation to a damaged liver, it can be incorporated into newly proliferating cells and thus accelerate liver regeneration. Administration of phosphatidylcholine is accompanied by a certain controversy, as no significant acceleration of liver regeneration has been demonstrated in studies. It is therefore possible that this is simply a placebo effect. However, it is still widely administered to patients with liver damage. In the Czech Republic it is freely available without a prescription under the name *ESSENTIAL FORTE*. Usually 1-2 capsules are given 3 times a day.

N-acetylcysteine

Dominant hepatoprotectant or rather antidote in case of paracetamol overdose. The main metabolite of paracetamol accumulates in liver cells in case of an overdose and thus depletes the reserves of glutathione with which it conjugates. The metabolite in excess then damages the hepatocyte and necrosis and acute liver failure occur. N-acetylcysteine maintains or replenishes glutathione in the hepatocyte. It is administered within 8-10 hours after poisoning exclusively intravenously 150 mg/kg, i.v., due to low bioavailability in the GIT and unpleasant taste.

Ursodeoxycholic acid

It is a secondary bile acid freely present in human bile. It is available in the Czech Republic under the name *Ursosan*. More information can be found in the article Ursodeoxycholic acid.

Metadoxine

A drug that is not registered in the Czech Republic, but is used by some countries in the treatment of acute alcohol intoxication, chronic alcoholism and liver damage. Metadoxine is able to increase the level of acetaldehyde hydrogenase and thus increase the clearance of alcohol in the urine. It also increases the level of glutathione, thereby preventing lipoperoxidation of membranes. It also reduces fibroproduction in the liver by reducing the level of TNF- α and inhibiting It cells. By molecular-biological mechanisms, it **stops the differentiation of preadipocytes into adipocytes** and is thus able to prevent the development of steatosis of the liver. The usual dosage is 300 to 500 mg intravenously 3 times a day for 3 months.

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