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# Effect of ursodeoxycholic acid on lipid metabolism: through the prism of evidence from 2019

**N. B. Gubergrits[1], N.V. Byelyayeva[1], T. L. Mozhyna[2], G. M. Lukashevich[3], P. G. Fomenko[3]**
[1]Medical Center «Medikap», Odessa,
[2]Healthy Heart Center, Kharkiv,
[3]Donetsk National Medical University, Lyman, Ukraine

**Key words:** ursodeoxycholic acid, lipid spectrum, cholesterol, triglycerides, evidence-based medicine

After the discovery of the method of ursodeoxycholic acid's (UDCA) synthesis and the publication of evidence confirming its ability to reduce the lithogenic properties of bile, active clinical use of UDCA began in the world. This drug, which has pleiotropic effect (choleretic, cytoprotective, immunomodulatory, antiapoptic, litholytic, hypocholesterolemic), has proven its effectiveness in the treatment various diseases: primary biliary cholangitis, intrahepatic cholestasis of pregnancy, gallstone disease. Being a tertiary bile acid, UDCA stimulates bile acid synthesis by reducing the circulating fibroblast growth factor 19 and inhibiting the activation of the farnesoid X-receptor (FXR), which leads to the induction of cholesterol-7α-hydroxylase, a key enzyme in the synthesis of bile acid de novo, mediating the conversion of cholesterol into bile acids. Changes in the formation of bile acids and cholesterol while taking UDCA intake is accompanied by activation of the main enzyme of cholesterol synthesis — 3-hydroxy-3-methylglutaryl-CoA reductase (HMGCR). Under the influence of UDCA the activity of stearoyl-Coa desaturase (SCD) in visceral white adipose tissue increases. According to studies conducted in 2019, UDCA improves lipid metabolism by regulating the activity of the ACT/mTOR signaling pathway, reduces the synthesis of cholesterol, decreases the fractional synthesis rate of cholesterol and the fractional synthesis rate of triglycerides. It has been proved that UDCA is accompanied by a decrease in the level of total cholesterol and low density lipoprotein cholesterol.