



PUREA – Liver Health

NPN	80048041	FORMAT	120 softgels
INDICATIONS	Natural products with antioxidant and detoxifying properties are believed to be hepatoprotective and anti-fibrotic particularly in cases of fatty liver disease. Clinical evidence suggests that such hepatoprotectant products can help support liver function, prevent or reverse the accumulation of excess fat in liver cells, as well as protect the liver from the negative effects induced by inflammatory cytokines released in response to the accumulation of neutral fat (triglycerides) in liver cells.	POSOLOGIE	2 softgels per day for as long as hepatic steatosis persists
WARNINGS / PRECAUTIONS	Consult a health care practitioner if symptoms persist or worsen, if you are pregnant or breastfeeding or if you have a history of non-melanoma skin cancer. Patients with fatty liver disease should see their primary healthcare providers on a regular basis for monitoring.		

COMPOSITION

Silymarin.....	100 mg	Beta-carotene.....	1 mg
(from Milk Thistle 80% extract)		Selenium	0,025mg
Vitamin C.....	100 mg	Folic acid.....	0,2mg
Vitamin E	50IU	Vitamin B12	0,005mg
Seal oil.....	500 mg	Vitamin B6.....	0,5mg
Lecithin	150mg	L-Methionine.....	75mg
Choline	75 mg		

DOCUMENTATION

FATTY LIVER DISEASE

Nonalcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease and occurs when you take in more fat and calories than your liver can process leading to an accumulation of excess fat in liver cells.ⁱ ii Although most patients with NAFLD have a benign course, some will progress to nonalcoholic steatohepatitis (NASH), liver cirrhosis, and hepatocellular carcinoma (liver cancer).ⁱⁱⁱ Although most patients are asymptomatic and there are as yet no diagnostic and therapeutic guidelines for NAFLD, it is important to identify it, to manage its risk factors and to actively treat it.

PATHOGENESIS

Accumulation of neutral fat (triglycerides) in liver cells arises mainly from insulin resistance, impaired mitochondrial oxidation of fatty acids, abnormal secretion of some hormones governing glucose and lipid metabolism (leptin, adiponectin), and increased release of inflammatory cytokines (tumour necrosis factor- α , interleukins).^{iv v} This excess accumulation of free fatty acids (FFA) and increased intracellular formation of toxic lipid metabolites (such as products of lipid peroxidation) is thought to elicit a sustained inflammatory response that triggers the progression of NAFLD to NASH.

Although a fatty diet and weight gain are the main culprits, diabetes, high cholesterol, alcohol use, and certain medications including chemotherapeutic agents will also increase the chances.^{vi}

TREATMENT

The compelling reason to treat NAFLD is to prevent progression to cirrhosis and liver failure. Fatty liver disease is a reversible condition if treated early before irreversible liver scarring occurs. Currently, there is no pharmaceutical medication proven to effectively treat fatty liver disease.^{vii}

While diet, lifestyle modification (abstinence from alcohol), and weight loss form the cornerstones of current treatment for NAFLD, the treatment of associated metabolic disturbances (diabetes, hyperlipidemia) is also sometimes recommended using both pharmacologic and non-pharmacologic therapies.

Non-pharmacologic drugs believed to be hepatoprotective or anti-fibrotic have also been successfully investigated as have medications with detoxifying and antioxidant properties. These natural products have been shown to reduce lipid peroxidation, reduce insulin resistance, reduce hepatic triglyceride content and the development of steatohepatitis, as well as improve plasma markers of liver injury/fibrosis. As oxidative stress plays an important role in pathogenesis of NAFLD, antioxidant supplementation has been considered as a therapeutic option, and promising results have been demonstrated.

INGREDIENTS

SILYMARIN: from Milk Thistle 80% extract is an antioxidant that helps reduce lipid peroxidation as well as reduce insulin resistance and liver steatosis.

VITAMIN E: d-alpha Tocopherol is an antioxidant that has been shown to reduce oxidative stress which is a key factor in the liver injury that occurs in response to the accumulation of neutral fat (triglycerides) in liver cells.

VITAMIN C: Ascorbic acid is an antioxidant that has been shown to reduce oxidative stress which is a key factor in the liver injury that occurs in response to the accumulation of neutral fat (triglycerides) in liver cells.

SEAL OIL: *Cystophora cristata* – Blubber. Seal oil is an excellent source of n-3 polyunsaturated fatty acids (n-3 PUFA). Studies have shown that n-3 PUFA enriched diets reduce hepatic triglyceride content and the development of steatohepatitis. The benefit is thought to be due to the modulation of lipid processing by n-3 PUFA's by acting as

ligands of the peroxisome proliferator-activated receptor α (PPAR α) and reducing hepatic inflammation and oxidative stress.

BETA-CAROTENE: β -carotene is a precursor (inactive form) to vitamin A. It has been shown to have hepatoprotective and anti-fibrotic properties.

SELENIUM: from Yeast. Selenium is an essential micronutrient that functions as cofactor for reduction of antioxidant enzymes, such as glutathione peroxidases. It has been shown to have hepatic detoxifying and antioxidant properties.

FOLIC ACID: Folate is needed to synthesize DNA, repair DNA, and methylate DNA as well as to act as a cofactor in certain biological reactions. There may be an association between folate supplementation and reduction of cancer risk.

VITAMIN B12: Methylcobalamin plays a significant role in the metabolism of every cell of the body, especially affecting the DNA synthesis and regulation but also fatty acid synthesis and energy production.

VITAMIN B6: Pyridoxine hydrochloride is an essential component of enzymes that play a major role in lipid metabolism.

LECITHIN: Phosphatidylserine-enriched soy lecithin. Lecithin has been shown to have hepatic detoxifying and antioxidant properties.

L-METHIONINE: L-methionine is an essential amino acid that helps to support liver function.

CHOLINE : Trimethylammonium-L. Choline is a water-soluble essential nutrient that helps to support liver function.

ⁱ Friedman JM, Halaas JL. Leptin and the regulation of body weight in mammals. *Nature* 1998;395(6704):763-70.

ⁱⁱ Marra F. NASH: are genes blowing the hits? *J Hepatol* 2004;40(5):853-6.

ⁱⁱⁱ Caldwell SH, Crespo DM. The spectrum expanded: cryptogenic cirrhosis and the natural history of non-alcoholic fatty liver disease. *J Hepatol* 2004;40(4):578-84.

^{iv} Friedman JM, Halaas JL. Leptin and the regulation of body weight in mammals. *Nature* 1998;395(6704):763-70.

^v Marra F. NASH: are genes blowing the hits? *J Hepatol* 2004;40(5):853-6.

^{vi} Ratzliff V, Bonyhay L, Di Martino V, Charlotte F, Cavallaro L, Sayegh-Tainturier MH, et al. Survival, liver failure, and hepatocellular carcinoma in obesity-related cryptogenic cirrhosis. *Hepatology* 2002;35(6):1485-93.

^{vii} Lomonaco R, Sunny NE, Brill F, Cusi K. Nonalcoholic Fatty Liver Disease: Current Issues and Novel Treatment Approaches. *Drugs*. 2013 Jan 11. [Epub ahead of print]

