



# ThorneVet Liver Support Formula

Liver support for dogs and cats

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**A comprehensive formula featuring multiple liver-protective ingredients**

Our companion animals are just as susceptible as we are to toxic insults from the environment, food, and water. Liver Support Formula provides key nutrients and botanicals that protect liver cells from damage that can be caused by toxins, in addition to enhancing both phase I and phase II liver detoxification.

## **Key Liver Support Features:**

- | Protects liver cells
- | Supports normal phase I and phase II liver detoxification
- | Promotes optimal glutathione levels
- | Contains liver-protective antioxidants

# Liver Support Formula – Special Nutrients

## Glutathione

Many of the ingredients in **Liver Support Formula** work synergistically to increase the level of the powerful intracellular antioxidant **glutathione**. **Glutathione** is a very potent antioxidant that protects important cellular processes from reactive oxygen species (including free radicals and heavy metals), thus **glutathione's** presence helps protect the liver from toxic insults and damage.

## N-Acetyl Cysteine (NAC)

Increasing the level of **glutathione** is one of the main targets of **Liver Support Formula**, which is designed to boost the level of intracellular **glutathione** through multiple pathways. **Glutathione's** presence is integral to optimal liver detoxification, in addition to working as a potent antioxidant to protect the liver from damage from toxins and free radicals. **N-Acetyl Cysteine (NAC)** is one of the main avenues for boosting **glutathione**. **NAC** is a precursor to the synthesis of the amino acid **cysteine**. Because **cysteine** is an important precursor to the synthesis of **glutathione**, its absence can limit the body's production of **glutathione**. Because **glutathione's** level is otherwise limited by its naturally poor bioavailability, supplementing with **NAC** is an efficient way to increase **cysteine** and thus ensure an adequate amount of **cysteine** for the subsequent synthesis of **glutathione**. When combined with the amino acid **methionine**, the **NAC** in **Liver Support Formula** helps boost **glutathione's** level in the liver from multiple pathways.

## Extracts of Curcumin, Milk Thistle, and Dandelion Root

**Curcumin** is very effective at down-regulating the group of proteins that can otherwise up-regulate harmful inflammatory activity in the liver, thus, **Curcumin** helps maintain a normal inflammatory response in the liver. **Curcumin** also acts as a cholagogue – meaning it stimulates the contraction of the gallbladder to promote the flow of bile, thus promoting digestion. The phospholipids that help make up this highly absorbable curcumin phytosome complex – CurcuVET® – are utilized by the body to help make important components of healthy liver cell membranes.

Combining extracts of **Curcumin, Milk Thistle, and Dandelion Root** reinforce the actions of the other synergistic nutrients in **Liver Support Formula**. The active ingredient in **Milk Thistle, Silymarin**, exerts its antioxidant activity to stabilize liver membranes and neutralize the free radicals that are produced when the liver metabolizes toxic substances. In addition, **Silymarin** also helps maintain an optimal level of **Glutathione** in the liver. **Dandelion Root Extract** supports liver detoxification and improves bile flow, further promoting healthy digestion.

## Vitamin E

Recent studies have found that **Vitamin E**, in combination with **Silymarin**, helps reduce liver damage in fatty liver, a common disorder in both cats and dogs. Acting as another essential antioxidant, **Vitamin E** is especially protective in the liver against fatty infiltration and the subsequent damage it can cause.

## Methionine

This essential sulfur-containing amino acid is essential for the liver's detoxification processes. **Methionine** also helps the liver metabolize fats, and in turn, **Methionine** itself is metabolized by the body to create cysteine and taurine, both of which support the production of **Glutathione** and bile, thus further enhancing the liver's functions.

## Selenium

The mineral **Selenium** is often deficient in liver dysfunction. **Selenium** acts as an antioxidant that neutralizes free radicals, thus preventing damage to the liver from the toxic substances that the liver is detoxifying. In addition, because **Selenium** is a **Glutathione** cofactor, increasing the intake of **Selenium** helps maintain or increases the liver's supply of **Glutathione**.

## Zinc

The mineral **Zinc** is essential to overall body biochemistry because it participates as an enzymatic cofactor in hundreds of biochemical reactions. In addition to its well-known support for immune function, **Zinc's** antioxidant activity in the liver helps protect liver cells.

## Folate, Vitamin B6, and Vitamin B12

There is research in favor of supporting dogs and cats who suffer from liver dysfunction by supplementing with **S-adenosyl-methionine – or SAME** – because **SAME** is crucial to the animal's efficient production of liver-protective **Glutathione**. The challenge with supplementing **SAME**, however, is **SAME** has poor oral absorption and therefore poor bioavailability. **Liver Support Formula** takes a different approach to supporting the animal's natural production of **SAME** by including in the formula a readily usable form of **Folate – L-5-Methyltetrahydrofolate** or **5-MTHF**. **5-MTHF** is used in the body to convert the undesirable amino acid, homocysteine, to **Methionine**, which the body can then convert to **SAME**. Without a sufficient amount of **5-MTHF**, **SAME** can't be efficiently recycled. In animals with liver issues, using this most tissue-ready form of **Folate – 5-MTHF** – is essential for optimizing the liver's detoxification processes.

**Vitamin B6 – Pyridoxine** – is essential as a cofactor for numerous enzyme reactions in the liver. Just like **5-MTHF**, in animals who have compromised liver function, supplementing **Pyridoxine** in its most readily usable form as **Pyridoxal 5'-Phosphate** ensures optimal utilization of this nutrient for the many cellular processes it is needed for.

Because **Vitamin B12** is stored in the liver, a properly functioning liver is essential to maintain good **Vitamin B12** status throughout the body, especially because **Vitamin B12** helps maintain optimal energy production in cells throughout the body. **Vitamin B12** is also necessary to digest amino acids and to metabolize carbohydrates and fats. Similar to **5-MTHF** and **Pyridoxal 5'-Phosphate**, **Liver Support Formula** provides **Vitamin B12** in the tissue-ready form of **Methylcobalamin**. Methylcobalamin is used by the body much more efficiently than is the inactive form of **Vitamin B12** – **Cyanocobalamin** – the form of **Vitamin B12** used in many animal health supplements. The cyanide molecule in **Cyanocobalamin** must first be "detached" in the liver, and then be replaced with a methyl group, to make the tissue-ready form of **Vitamin B12** the body actually uses – **Methylcobalamin**.

## Dimethylglycine

**Liver Support Formula** ingredients support each other to provide a multi-faceted foundation for the liver to function optimally – in both its synthesis processes and its detoxification processes – and to help the liver repair itself from injury. **Dimethylglycine** is a derivative of the simplest amino acid, glycine. **Dimethylglycine** is a very versatile nutrient that the body uses to make many important substances. For example, **Dimethylglycine** acts as a metabolic enhancer to support the liver's multiple synthesis processes. In the liver, **Dimethylglycine** readily gives up its methyl groups to facilitate the liver's production of **SAME**, thus further facilitating the body's natural production of liver-protective **Glutathione**. **Dimethylglycine** is also a building block for other important substances, including **Methionine** and **Choline**.

## The Bottom Line

Because toxins in the environment can find their way into their food and water, the liver is almost always a very busy organ in companion animals. **Liver Support Formula** is a unique formula that combines hepato-protective botanicals with antioxidants and other important nutrients that support the many detoxifying and synthesizing processes that occur in a companion animal's liver.

### Liver Support Formula

Antioxidants, Botanicals, and Nutrients  
for Optimal Liver Function



Dogs: 1 soft chew per 25 pounds  
body weight daily.



Cats: 1/2 soft chew daily

V961-SC / 90 Soft Chews



GLUTEN FREE



#### PRODUCT FACTS

##### Active Ingredients per 2.5-gram Soft Chew:

L-Methionine	100 mg
N-Acetyl-L-Cysteine	100 mg
L-Glutathione	50 mg
Dimethylglycine	50 mg
Milk Thistle Extract (fruit) ( <i>Silybum marianum</i> )	50 mg
Curcumin Phytosome ( <i>Curcuma longa</i> extract (root) / Phospholipid complex from Sunflower) (CurcuVET®)	40 mg
Dandelion Root Extract (4:1)	14 mg
D-Alpha Tocopheryl (Vitamin E) (30 IU)	5 mg
Pyridoxal 5'-Phosphate (Vitamin B6)	3 mg
Zinc Picolinate	50 mcg
Methylcobalamin (Vitamin B12)	50 mcg
L-5-Methyltetrahydrofolic Acid, Glucosamine Salt	50 mcg
Selenium (L-Selenomethionine)	20 mcg

##### Inactive ingredients (Soft Chew Matrix):

Arabic gum, buffered white distilled vinegar, chick pea flour, chicory root, citric acid, coconut glycerin, coconut oil, guar gum, natural hickory smoke flavor, rosemary extract, sunflower lecithin, sunflower oil, tapioca starch.

†CurcuVET® is a registered trademark of Indena S.p.A.



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