

NUTRAMAX LABORATORIES, INC.

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MARIN® FOR CATS

Nutramax Labs.

Sold Only Through Veterinarians

ACTIVE INGREDIENTS:

Vitamin E (As d- α Tocopheryl Acetate)	50 IU
Silybin A+B	9 mg*

OTHER INGREDIENTS:

Dicalcium phosphate, microcrystalline cellulose, natural tuna flavor, natural chicken flavor, phosphatidylcholine, silicon dioxide, and magnesium stearate.

* In a phosphatidylcholine complex to improve bioavailability.

Marin for Cats is a combination of silybin and vitamin E for veterinary use only. It is available as a single strength tablet.

BACKGROUND

Silybin is the most biologically active component of an extract known as silymarin.¹ Silybin/silymarin has been shown to have beneficial effects on liver function.² Vitamin E, a membrane-associated antioxidant, helps protect the liver against oxidant injury.³

PURPOSE

Marin For Cats is specially formulated with silybin and vitamin E to provide comprehensive hepatic support.

Silybin/silymarin has many different mechanisms of action. *In vitro* and *in vivo* studies have shown that it protects against oxidative stress;^{4,5} promotes protein synthesis within hepatocytes,⁶ a mechanism for liver cell

regeneration; inhibits leukotriene production,⁷ which can be beneficial as production of leukotrienes is a component of the inflammatory response; stimulates biliary flow and production of hepatoprotective bile salts (e.g., beta-muricholate and ursodeoxycholate);⁸ and increases levels of glutathione.⁹

Vitamin E, a membrane-associated antioxidant, benefits liver function because oxidant damage to hepatocytes can affect liver health. Vitamin E has been shown to reduce the oxidative damage to the hepatocyte mitochondrial membranes caused by hydrophobic bile salts (these bile salts build up in the liver when bile flow is impaired).³ Vitamin E use has been reported in cats for its antioxidant properties.^{10,11} Vitamin E has other actions separate from its antioxidant role that also help to support hepatic health.²

PHARMACOKINETICS

Silybin has low bioavailability.¹² Marin, therefore, has been specially formulated to address this issue. It contains silybin in a complex with soybean phosphatidylcholine, resulting in superior absorption and bioavailability compared to silymarin or silybin administration alone.¹²⁻¹⁴ A study in dogs showed plasma silybin levels more than four times higher with administration of a silybin-phosphatidylcholine complex (SPC) than obtained with administration of silymarin alone (see Figure 1).¹⁵ Studies in rats showed that administration of the silybin-phosphatidylcholine complex was capable of reaching effective intracellular levels in liver microsomes not achieved with silybin administration alone.⁴

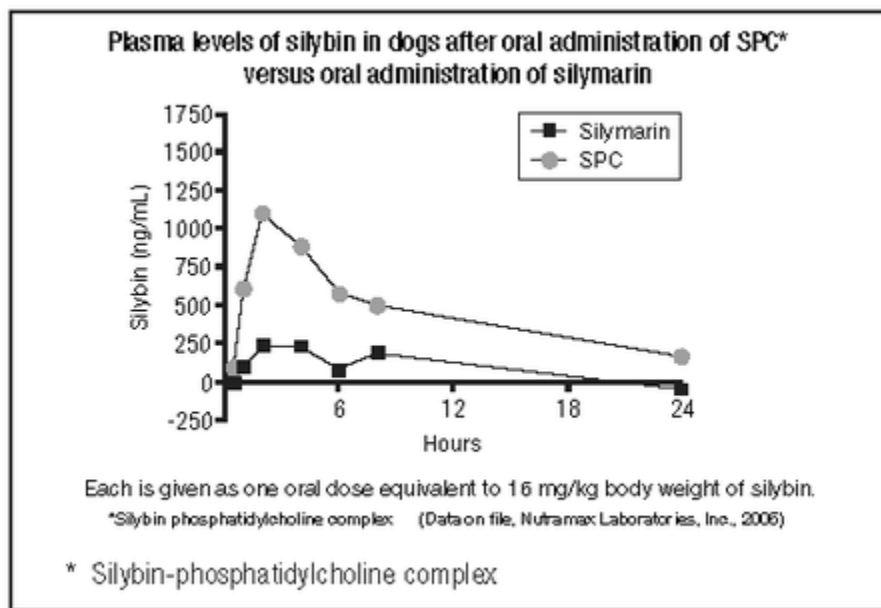


FIGURE 1

Plasma levels in dogs after oral administration of silymarin versus SPC (silybin-phosphatidylcholine complex). Each was given at the same amount based on silybin content (178 mg).¹⁵

SAFETY

There are no known drug interactions or contraindications to the use of silybin/silymarin in animals.^{16,17} While mild side effects, such as gastrointestinal upset, itching and headache, have been rarely reported in primates,^{16,18} side effects have not been noted in cats.^{16,17}

Vitamin E is also well-tolerated in recommended amounts.³

ADMINISTRATION

Marin[®] For Cats is available as tablets that may be given orally or crumbled over the food. Recommended administration amounts are provided below.

DAILY ADMINISTRATION GUIDE

Body Weight	Marin for Cats
Up to 14 lbs	1 tablet
Over 14 lbs	2 tablets

STORAGE

Store in a cool dry place. Keep tablets in bottle until used.

Store in a cool, dry area out of direct sunlight.

Keep lid tightly secured to ensure freshness.

Keep bottle out of the reach of children.

This bottle contains (1) non-toxic desiccant to help preserve freshness and ensure the shelf life of the product.

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60 Tablets	00-1026-02
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