Liver Protector, Antioxidant and Liver Function Stimulant

Active Ingredients (per ml):
- Choline: 60 mg
- Methionine: 5 mg
- Omega-9: 60 mg
- Sorbitol: 150 mg
- Vitamin B3 (Niacin): 50 mg
- Vitamin B12: 30 mcg
- Vitamin E: 50 mg

Composition: Sorbitol, fatty acids, sodium phosphate, sodium benzoate, citric acid.

Additives (per litre): Nutritional additives: Vitamins – E-307 Vitamin E (Alpha-Tocopherol) 50 g, Niacinamide 50 g, Choline 60 g, E-420 Sorbitol 50 g, Vitamin B12 30 mg. Amino acids – Methionine 5 g.

Essential Nutritional Characteristics: Low but high quality protein content and highly digestible carbohydrates.

Analytical Constituents: Moisture 71.0%; crude oils and fats 7.0%; crude protein 0.5%; crude ash 0.1%; crude fibre 0.0%; methionine 0.5%; lysine 0.0%; sodium 0.0%.

Properties and Mechanism of Action:
The liver performs a detoxification process in two phases. **In Phase I**, unwanted chemical substances are neutralised by converting them into less harmful substances. The free radicals produced during this process must be eliminated; an excess of free radicals can damage liver cells. The molecules that participate in this stage are glutathione, B vitamins and antioxidant substances.

**In Phase II**, unwanted substances are removed by converting them into water-soluble chemical substances than can easily be excreted in the bile or urine. The active principles in this phase are glutathione, cysteine and vitamin E. This second phase is also called the Conjugation Pathway, because this is where the liver cells add another substance (cysteine, glycine or a sulphur molecule) to the toxic chemical substance to facilitate elimination of the free radicals that damage hepatocytes.

The VETERINARY CLINICAL CARE® Liverade formula provides a combination of Choline, Methionine, Sorbitol and Vitamins B and E, which act synergistically to provide good hepatic protection, proper lipid metabolism and optimal athletic performance.

Methionine and Choline play a key role as agents of protection and hepatic detoxification. They are sulphur compounds that stimulate erythropoiesis and have potent lipotropic action that helps reduce the work of the liver in an organ whose detoxifying function is suppressed due to excess fat, while protecting the liver from the harmful actions of some toxins. Methionine is necessary to manufacture cysteine, a component of glutathione, the main liver protector, whose powerful antioxidant action neutralises the many compounds that harm the liver. In addition, Methionine has a strong anti-inflammatory effect and is involved in the synthesis of L-carnitine, improving the athletic performance of horses in training and competition. Methionine also appears to be a great help in reducing the severity of reactions to both food and environmental allergens due to its ability to detoxify histamine, the main chemical product implicated in allergic reactions.

Features
- Detoxifies, protects and improves overall liver function.
- Hepatic anti-inflammatory and antioxidant action.
- Improves lipid metabolism and prevents their accumulation in the liver.
- Improves the performance of horses in competition.
- Enhances the immune system.
- Anti-allergic action.
- Does not contain doping substances.

Available exclusively through veterinarians.

VetNova
**Liver Protector, Antioxidant and Liver Function Stimulant**

**Sorbitol** stimulates bile excretion improving the digestion of the lipids in the daily ration, allowing the liver to detoxify, which is reinforced by its diuretic action. It is also an important energy source and powerful tonic for the liver cell. Lastly, Sorbitol helps the intestinal absorption of certain vitamins that are important for the organism.

**Vitamin B3 or Niacin** is a water-soluble vitamin that is active in the gluconeogenesis process that limits the lipidosis of tissue by improving the use of fat and carbohydrates. It also participates in the synthesis of some hormones and is important for growth. Both Niacin and Methionine are essential for the optimal functioning of the Krebs cycle.

**Vitamin B12 or Cobalamin** is important for the metabolism of proteins, carbohydrates and lipids. It acts as a liver protector helping to prevent and recover from liver disorders in the event of intoxication. It is also essential for the synthesis of haemoglobin and the production of red blood cells; its deficiency can cause anaemia and low athletic performance. Finally, Vitamin B12 plays a key role in the synthesis and maintenance of the myelin sheath that covers nerve cells.

**Vitamin E** is a lipophilic antioxidant that prevents damage to the cellular membranes and protects tissue from free radicals. It also enhances the immune system. Its use is recommended above all in inflammatory liver diseases, especially those that occur with significant necrosis.

**Indications:**
- Acute or chronic hepatic impairment of any origin, whether caused by fat overload in the liver or hepatocyte impairment.
- Parasitic diseases: Piromplasmosis, roundworm (particularly in foals, which are very vulnerable to worms in the small intestine that migrate to the liver) and other hepatic parasites.
- Viral hepatitis: Herpes virus, equine serum hepatitis, etc.
- Endogenous and exogenous intoxication, hepatotoxic treatments, food poisoning from heavy metals, etc.
- Horses with intense athletic activity and pathologies derived from overexertion.
- Anaemias, convalescence and recovery difficulties.
- Metabolic disorders.
- Food and environmental allergies.
- Older horses.

**Target Species:** Equines.

**Directions of Use:** Shake before use. Mix with the feed or administer orally with a syringe.
- Initial dosage (5-7 days): 30 ml/ 100 kg.
- Prevention or maintenance dosage: 5 ml/ 100 kg.
To improve initial acceptance we recommend dividing the dose into two parts: Morning and night.

**Warnings:** This product does not contain any substance banned in competition. Keep the container tightly closed in a cool, dry place, protected from direct sunlight and out of the reach of children and animals. Complementary feed for horses, not intended for human consumption.

**Presentation:** 1 L (40 maintenance doses).

**Bibliography:**
- Anisimova SI, Donchenko HV, Parkhomenko IuM, Kovalenko VM. [Mechanism of hepatoprotective action of
The VETERINARY CLINICAL CARE® Liverade formula provides a combination of chemical substances to facilitate elimination of the free radicals that damage hepatocytes.

**Conjugation Pathway**

**Properties and Mechanism of Action:**

**Analytical Constituents:**

<table>
<thead>
<tr>
<th>Active Ingredients</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin E (Alpha-Tocopherol)</td>
<td>50 g</td>
</tr>
<tr>
<td>Niacinamide</td>
<td>50 g</td>
</tr>
<tr>
<td>Choline</td>
<td>60 mg</td>
</tr>
<tr>
<td>Omega-9</td>
<td>60 mg</td>
</tr>
<tr>
<td>Methionine</td>
<td>5 mg</td>
</tr>
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<td>Vitamin B3 (Niacin)</td>
<td>50 mg</td>
</tr>
</tbody>
</table>

**Essential Nutritional Characteristics:**

- Methionine also appears to be a great help in reducing the severity of reactions to both food and competition. Methionine is involved in the synthesis of L-carnitine, improving the athletic performance of horses in training and many compounds that harm the liver. In addition, Methionine has a strong anti-inflammatory effect and is a component of glutathione, the main liver protector, whose powerful antioxidant action neutralises the sulphur compounds that stimulate erythropoiesis and have potent lipotropic action that helps reduce the fat overload in the liver.

**Vitamins B and B6:**

- Methionine and metabolism and optimal athletic performance.

**Target Species:**

- Older horses.
- Metabolic disorders.
- Parasitic diseases: Piroplasmosis, roundworm (particularly in foals, which are very vulnerable to worms in the small intestine that migrate to the liver) and other hepatic parasites.

**Acute or chronic hepatic impairment of any origin, whether caused by fat overload in the liver or hepato-toxicity, which is reinforced by its diuretic action. It is also an important energy source and powerful stimulator of bile excretion improving the digestion of the lipids in the daily ration, allowing the liver to detoxify, which is reinforced by its diuretic action.**

**Prevention or maintenance dosage:**

- 5 ml/100kg.

**Shake before use. Mix with the feed or administer orally with a syringe.**

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**Bibliography:**


21. Rossi L, Laghi V, Cavallaro A. [Research on the hepatoprotective effect of 1-amino acids involved in the Krebs-Hen...
Liver Protector, Antioxidant and Liver Function Stimulant

Analytical Constituents:

- Low but high quality protein content and highly digestible
- Essential Nutritional Characteristics:
  - Methionine
  - Choline
  - Vitamin E
  - Metabolism and optimal athletic performance

Additives:

- Vitamin E: 50 mg
- Methionine: 5 mg
- Choline: 60 mg

Facts:

- Methionine is necessary to manufacture cysteine, a crucial amino acid involved in the synthesis of L-carnitine, improving athletic performance in horses.
- Vitamin E is a lipophilic antioxidant that prevents damage to the cellular membranes and protects tissue.
- Metabolism of proteins, carbohydrates and lipids requires cobalamin (vitamin B12), which also functions in the Krebs cycle.
- Niacin is important for the metabolism of proteins, carbohydrates and lipids and is essential for the synthesis of haemoglobin and red blood cells.

Warnings:

- Do not exceed the recommended dose.
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