



# vet planet

Animal's health is our passion

# Hepatic supplements

- Metabolic (intracellular): arginine, ornithine, phospholipids, taurine (cats)
- Functional (extracellular): plant extracts stimulating bile production, acidifiers

# S-adenosylmethionine (SAMe)

- The healing properties of methionine:
  1. Methionine acts detoxicating, lipotropic, anti-inflammatory, anti-allergic, acrimonygenic, cholagogic and anti-cholelithiasis.
  2. It protects the liver and kidney parenchyma. Increases creatine synthesis in muscle, increases physical performance of the system.
  3. Removes harmful peroxides and heavy metals from the body. Works antihistamine by speeding up the catabolism and excretion of histamine.

## SAMe Indications

1. S-adenosylmethionine indications include almost all of liver disease, but especially toxic liver damage and stoppage of bile.
2. S-adenosylmethionine reduces the toxic effect of oxidative steroid use in dogs and cats.
3. In addition, it demonstrated the therapeutic effects of S-adenosylmethionine in the case of paracetamol poisoning in cats (9). The recommended dose of S-adenosylmethionine is 20 mg/kg b.w. administered on an empty stomach once a day

# Silymarin

- The healing properties of silymarin:
  1. effect of silymarin is to protect the liver against toxic agents and supporting regeneration processes in the damaged organ.
  2. antioxidant activity -inhibition of entry of toxins into the interior of hepatocytes - by binding silymarin flavonolignans proteins and membrane receptors
  3. Anti-inflammatory - involving the inhibition of neutrophil cell migration, inhibition of leukotriene synthesis and the formation of prostaglandins
  4. inhibition of fibrosis in the liver - via inhibition of proliferation of stellate cells in the liver and their transformation into myofibroblasts, which are responsible for the deposition of collagen and other fibrous proteins, which leads to fibrosis and cirrhosis.

# Silymarin indications

1. Silymarin is a non toxic and safe. It can be recommended as adjunctive therapy in toxic liver damage, in chronic inflammation and cirrhosis.
2. Recommended dose in humans is one pill a35 or 70 mg, 3 times daily after meals, for use by 2-4 weeks.
3. Transferring these recommendations to other species, you may be considered to be safely administered to dogs weighing up to 30 kg - pill a35 mg and weighing more than 30 kg - pill and a70 mg, three times daily, for chronic use.

# Zinc

1. This element is a structural and functional component of many enzymes. Zinc is involved in many metabolic processes such as nucleic acid metabolism, carbohydrate metabolism, protein synthesis, wound healing and the growth and reproduction of the organism. In dogs with chronic liver disease has been shown to zinc deficiency.
2. In cases of liver zinc is used to reduce copper absorption from the gastrointestinal tract and reduce its uptake by the liver, and also as a factor antioxidant and limiting the formation of fibroids

# Ornithine

1. L-ornithine formed from arginine is an amino acid, but not part of the protein; plays an important role in the urea cycle.
2. The main purpose of the urea cycle is to remove ammonium residues from the body, which exhibit strong neurotoxic and may cause hepatic encephalopathy.
3. It accelerates liver and brain detoxification processes.
4. Preferably affect the metabolism of proteins, fats and carbohydrates in the body.
5. It regenerates the damaged liver cells.
6. Especially important role in cats.

# The cause of encephalopathy?

Amino acid



Deamination



pyruvate

glucose

urea

Eliminated via  
kidneys

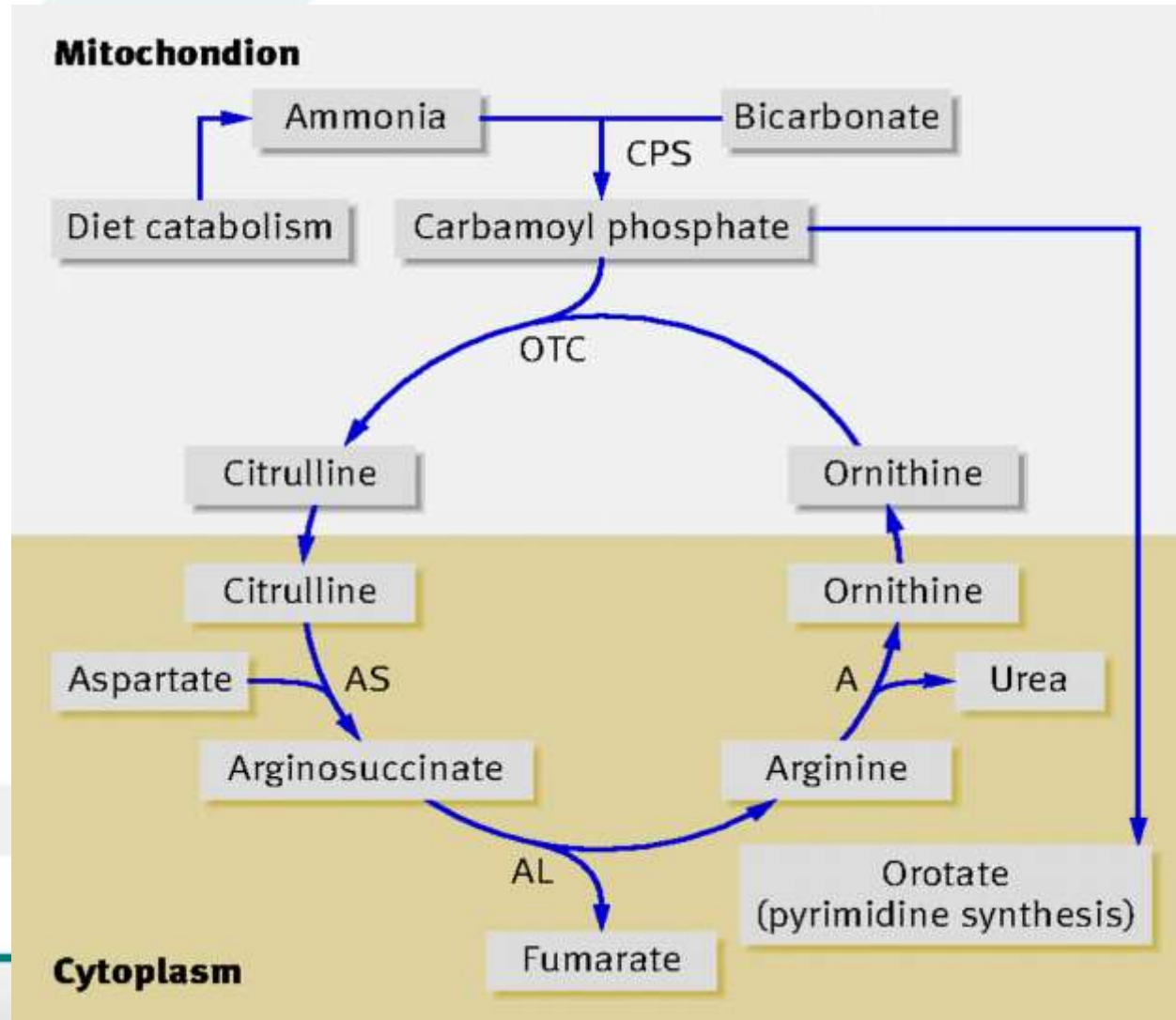
arginine

ornithine

**Result: protein deficit (arginine) leads to accumulation of nitrogen waste products in liver and hepatic encephalopathy**



# Ornithine in urea cycle



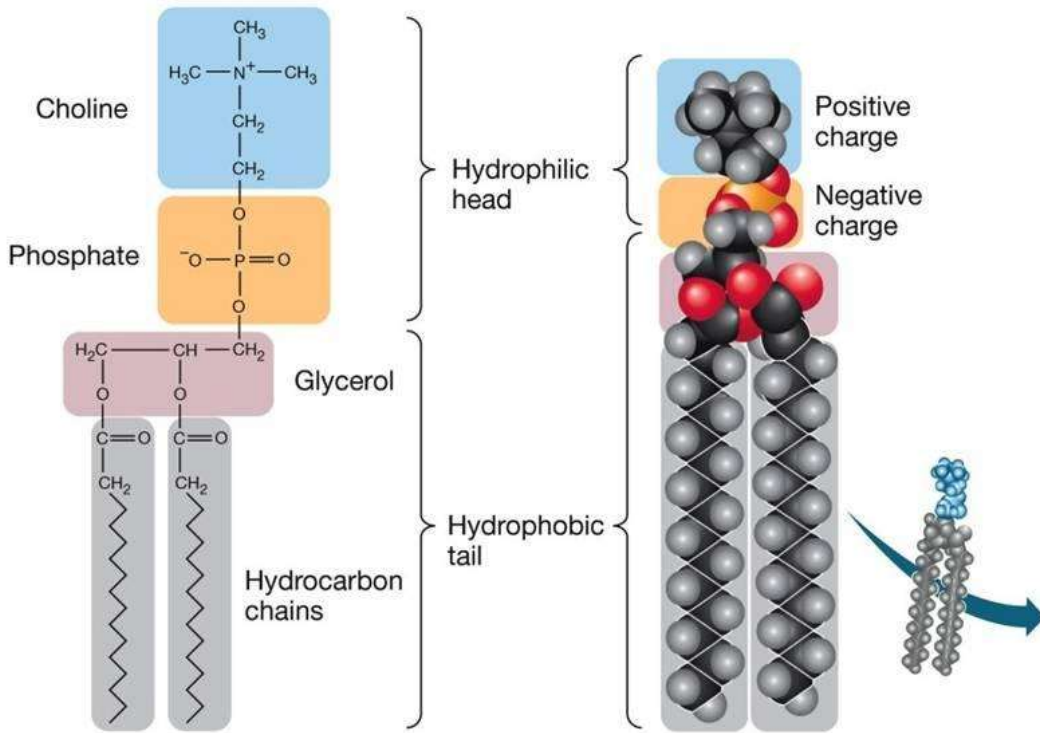
# Ornithine indications

1. Acute hepatitis and cirrhosis irrespective of etiology, states before coma and hepatic coma.
2. In addition preventively acute, subacute and chronic hyperammonemia.
3. Ornithine increases the tolerance of the liver parenchyma damaging substances, such as anti-TB drug and anti-tumor.
4. Ornithine are also used in digestive disorders caused by liver failure.

## Ornithine

- Improves hepatic and encephalic detoxification processes
- Positively improves protein, carbohydrates and lipids metabolism
- Regenerative for hepatocytes

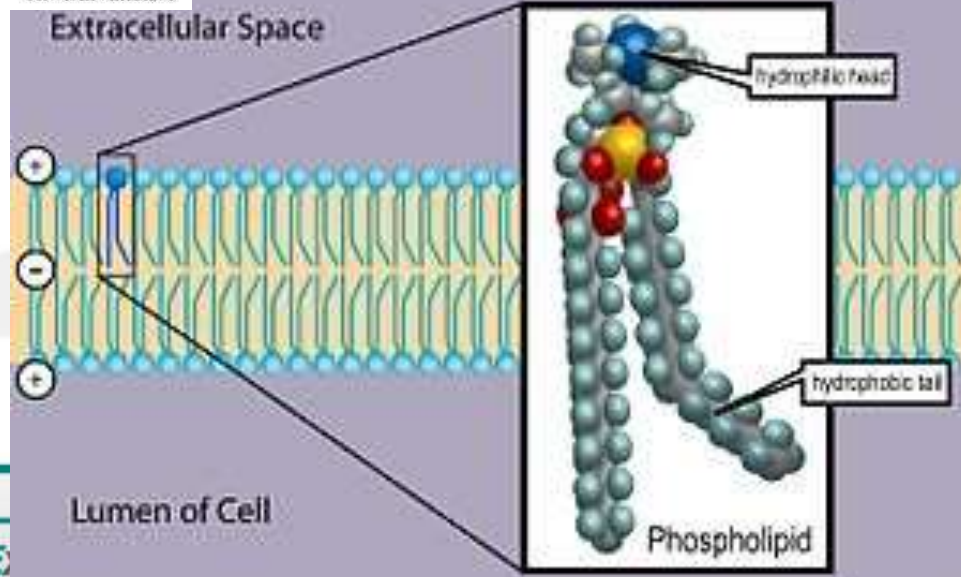
**(A) Phosphatidylcholine**



# Phospholipids

LIFE 9e, Figure 3.20 (Part 1)

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# Phospholipids

- Became a part of hepatocytes membranes
  - Refill the damages caused by pathological process
  - Improve the regeneration of injured hepatocytes
- Inhibit fibrous degeneration of liver cells by decreasing collagen production and increasing collagenase activity
- Necessary for hepatocytes proliferation and differentiation
- Decrease the susceptibility of hepatocytes to cytotoxicity of immune system

# Phospholipidies

1. Part of the hepatocyte membrane.
2. Complement the losses caused by the disease process accelerate the regeneration of damaged cells.
3. Inhibit the process of fibrosis in the liver by reducing the production of collagen and increase collagenase activity.
4. They are essential in the process of proliferation and differentiation of the liver cells.
5. They lower the sensitivity of hepatocytes cytotoxic immune system.

# Phospholipid indications

## 1. The use of essential phospholipids:

- reduce serum alanine aminotransferase
- reduce LDL cholesterol levels

## 2. Improvement in liver histology test results were obtained:

- after a year of phospholipids administered in patients with hepatitis B
- in patients with autoimmune hepatitis
- 50% of patients with type II diabetes and hepatic steatosis

# Artichoke

- Artichoke (*Cynara scolymus* L.)
- The antioxidant properties of the artichoke extract are based on its active ingredients: mainly flavones, flavanols, phthalates, coumarins, phenolic acids.
- *C. scolymus* has a strong stimulating effect on bile secretion due to its mono- and di-cacao-saccharic acids
- They increase the amount of bile excreted  
They increase the concentration of bile acids in the bile



# HEPATIALE FORTE

*phospholipidum, ornithinum*

## ❖ Indications

For dogs and cats to support liver functions in case of liver failure or disorders.

## ❖ Content:

Phospholipids (ex soya) containing phosphatidylcholine, and ornithine as L-ornithine L-aspartate.

## ❖ Packing:

- 30 tablets (3 blisters, 10 tablets each)/pack
- 20 packs/case

## ❖ Dosage

1 tabl/15 kg body mass



# HEPATIALE FORTE Large Breed

*phospholipidum, ornithinum*

## ❖ Content:

Phospholipids (ex soya) containing phosphatidylcholine, ornithine as L-ornithine L-aspartate.

## ❖ Packing:

- 40 tablets/pack
- 20 packs/box

## ❖ Dosage

1 tabl/25 kg body mass



# Hepatialle Forte

Small breed & cats

❖ **Content:**

Phospholipids (ex soya) containing phosphatidylcholine, ornithine as L-ornithine L-aspartate.

❖ **Packing:**

- 40 capsules, Twist Off

❖ **Dosage**

- Cats: 1 capsule per day

- Dogs: 1 capsule for 5 kg of body mass per day

❖ Product registered as nutraceutical (food supplement)



**40 caps.  
twist-off**

# Hepatialle / Hepatialle SB / Hepatialle LB

## NUTRITIONAL PURPOSE

- For dogs and cats to support liver functions in case of liver failure or disorders.

## Content:

- Phospholipids (ex soya) containing phosphatidylcholine, and ornithine as L-ornithine L-aspartate.

## Key benefits:

- Unique combination of phospholipids and ornithine supporting liver function
- There are no drugs specific for liver disease treatment available – the supplementation could only speed up the process of liver cells regeneration
- Phospholipids are components of liver cell membranes, they prevent from liver fibrosis and improve fat digestion
- Ornithine facilitates elimination of ammonium toxins from the body , especially important in cats
- Supportive during medical treatment of liver disease
- Speeds up the normalization of increased liver enzymes (AST, ALT)
- Scientific paper supporting its action available
- Product produced in factory fulfilling Good Manufacturing Practice requirements – the highest quality standards in pharmacy
- Offered in three different formulations: regular (tablets); Large Breed (tablets) and Small Breed (as Twist-Off)

# 19 days with Hepatiale Forte

## Wynik badania laboratoryjnego nr: 0060-02-12

Data pobrania materiału: 2012-02-01    Data badania: 2012-02-02    Rodzaj próbki: Krew i surowica

VETLAB s.c.  
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### Właściciel: Szymańska

Pacjent: Olsen    Gatunek: Pies    Rasa:    Płeć: samiec    Wiek: 9 lat

Lecznica: D111 PRZYCHODNIA WETERYNARYJNA s.c. Joanna Kokot-Ciszewska, Tomasz Ciszewski

Lekarz: Ciszewski    Tomasz

Badanie	Wynik	Jedn.	Norma
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#### Uwagi

Ze względu na liczne skrzepy i mikroskrzepy morfologia niemożliwa do wykonania.

Albuminy	33,1	g/l	25,0-44,0	
ALT (GPT)	499,0	U/l	1,00-55,0	
alfa-Amylaza	638,6	U/l	10,0-1650,0	
AP - fosfataza alkaliczna	58,9	U/l	1,00-108,0	
AST (GOT)	189,3	U/l	1,00-30,0	

## Wynik badania laboratoryjnego nr: 0885-02-12

Data pobrania materiału: 2012-02-20    Data badania: 2012-02-21    Rodzaj próbki: Surowica

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### Właściciel: Szymańska

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Lekarz: Ciszewski    Tomasz

Badanie	Wynik	Jedn.	Norma
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Albuminy	31,8	g/l	25,0-44,0	
ALT (GPT)	41,4	U/l	1,00-55,0	
alfa-Amylaza	540,7	U/l	10,0-1650,0	
AP - fosfataza alkaliczna	30,4	U/l	1,00-108,0	
AST (GOT)	30,1	U/l	1,00-30,0	

# Hepatialle Forte Advanced



# Hepatialle Forte Advanced



*Hepatialle Forte Advanced* contains:

- **Composition:**
- *Phospholipids*
- *Ornithin*
  
- **Additives:**
- **S-adenosylmethionine** (*SAMe*) 200,00 mg
- *Extract of Silybum marianum (L.)* (*silymarin*) 50,00 mg
- *Zinc* 12,50 mg