

# LOVIT

## Hepavent

Liquid formulation with carnitine, choline, and betaine to support efficient metabolism and normal liver function.

### Convincing advantages:

- Supports the metabolism of the liver
- Promotes efficient feed conversion
- Helps to prevent hepatic lipidosis



## LOVIT Hepavent Liquid – relief through supplementation.

Fatty Liver Haemorrhagic Syndrome (FLHS) or hepatic lipidosis is triggered off by a positive energy balance of the animals and is one of the most common causes of death in commercial poultry husbandry. Top-performing laying hens towards the middle / end of the laying cycle and fast-growing fattening birds of certain breeds are most commonly affected. The triglycerides accumulated in the liver of birds affected by FLHS often exceed a range that is physiologically tolerable. The multitude of free fatty acids and the fatty acid synthesis, which is permanently activated as a result of the excess energy, enable reactive oxygen species to be formed. This strongly increases the oxidative stress in the liver and causes damage to tissue. Tears in the liver capsule then lead to the characteristic bleeding seen with FLHS.<sup>1,2,3,4</sup>

**The knowledge behind LOVIT Hepavent.** LOVIT Hepavent meets the increased demand for lipotropic factors in phases of rapid growth or overstress on liver metabolism (e.g. as in the case of FLHS).

**L-Carnitine** is mainly produced in the liver from lysine and methionine. It transports activated long chain fatty acids into the mitochondria to produce energy, and also serves as a buffer of fatty acids. The amount of free activated fatty acids causing damage to the mitochondria and thus triggering off a lack of energy in the cell, is reduced. L-Carnitine also increases the amount of free coenzyme A in the cell and thus promotes the metabolism of short and medium chain fatty acids in addition to energy production from carbohydrates. It thus optimises energy production from feed.<sup>4,5,6,7</sup>

**Choline** is a component of the lipids in the cell membranes and is essential for the formation and maintenance of cells and tissue. It also supplies methyl groups for the metabolism and serves as a precursor of the neurotransmitter acetyl choline. In young animals and high-performing breeds the own synthesis is insufficient. Stress situations and high demands on performance quickly lead to a choline deficiency, which in turn ends in hepatic lipidosis. Physiologically speaking, the deficiency can be seen in growth depression, perosis, and increased mortality.<sup>4,6,7</sup>

**Betaine** is involved as methyl group donor, i.a. in the synthesis of carnitine and creatine and also as osmolyte in the stabilisation of cells. During heat periods betaine maintains the cellular water balance and thus primarily protects the enzymes of the hepatocytes against inactivation caused by osmosis. Supplementation with betaine has a positive effect on performance during heat stress and on carcass quality at slaughter.<sup>6,7,8</sup>



### **LOVIT Hepavent: for a normal liver function right from the start.**

The combined effect of carnitine, betaine and choline in LOVIT Hepavent supports an ideal liver function, especially under stress situations, such as high performance level, heat stress, change of housing or medicinal treatment. It can help to reduce the risk of hepatic lipidosis. In addition, sorbitol supplies readily available energy. Thanks to its liquid formulation, LOVIT Hepavent Liquid is easy to use on every agricultural holding.

**Composition per litre:** L-carnitine 57,000 mg, choline 100,000 mg, betaine 20,000 mg, and sorbitol.

**Recommended use:** 0.5 – 1 l per 1,000 l of drinking water for a period of 2 – 3 days. Repeat as required.

**Standard packaging:** 12 x 1 l bottles per box, 4 x 5 l canisters per box.

#### References:

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- 4 Oliveira LPM, de Jesus RP, Freire TO, Oliveira CP, Castro Lyra A, Lyra LGC. Possible molecular mechanisms soymediated in preventing and treating nonalcoholic fatty liver disease. Nutr. Hosp. 2012;27(4):991-998.
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- 7 Pape H-C, Adams CA, Busch A, et al. Futtermittelzusatzstoffe – Technologie und Anwendung. AgriMedia 2006.
- 8 Eklund M, Bauer E, Wamatu J, Mosenthin R. Potential nutritional and physiological functions of betaine in livestock. Nutr. Res. Rev. 2005;18:31-48