

## HOW IT WORKS

The intent of developing "RESCUE PACK" is to provide nutritional assistance to the bird in the presence of mycotoxins. Even though outbreaks of acute high level mycotoxin contamination of the diet in the poultry industry are rare it is common for poultry to be exposed to low level mycotoxin contamination. Many times these low levels of contamination are not identified and



The dietary recommendations found in the literature which are recommended to prevent or partially alleviate mycotoxicosis in poultry are highly associated with preventing the oxidative damage to cells known to occur as a result of various mycotoxins.



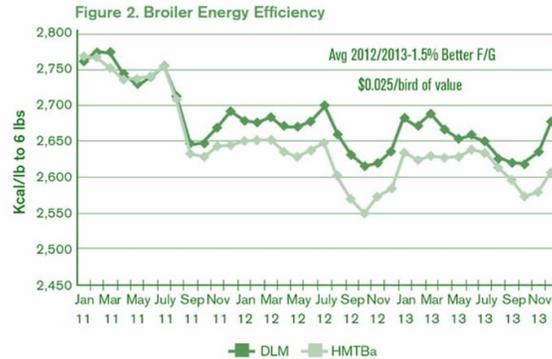
Various mycotoxins are known to cause a decrease in antioxidant enzyme activities in animal cells.

Thus, it is important for "RESCUE PACK" to provide the majority of its protection to the bird in the form of various antioxidants.

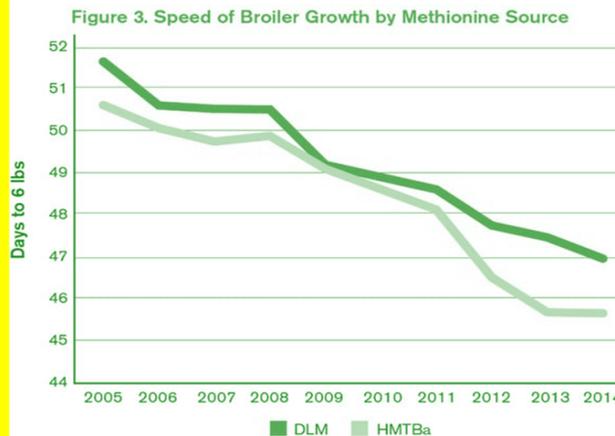


## RESULTS OF RESCUE PACK

Birds consuming DL-methionine will stop eating when the methionine levels in the blood plasma gets too high. Birds fed HMTBa content in Rescue Pack have much lower levels of methionine in the blood plasma as HMTBa in Rescue Pack is converted to methionine in the tissues. This allows birds fed HMTBa to have higher feed intake at high levels of methionine supplementation.



All cells are normally surrounded by a fat membrane to keep molecules from entering the cell. HMTBa and other organic acids diffuse across the cell membrane into the cell directly. DL-methionine, however, requires active transport, which requires energy and releases heat that the animal must then dissipate. This makes DL-methionine less efficient in animals during periods of stress, especially heat stress. During periods of heat stress (above 18 – 21°C), birds fed DL-methionine show higher mortality rates.



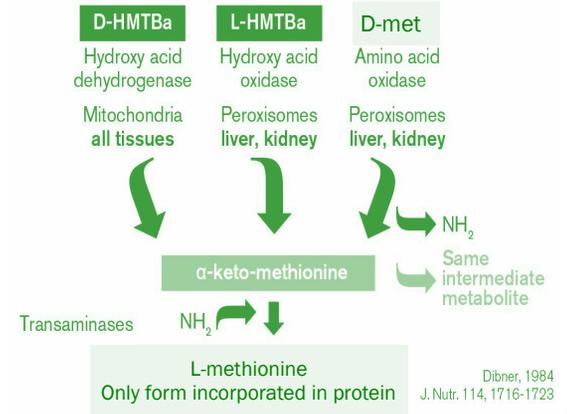
Organic Chemical Solutions, LLC

Organic Natural Safe Chemical Solutions for Livestock

## Rescue Pack

Advanced mycotoxicosis curative and prophylactic technology

L-methionine Conversion Process



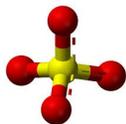
### Packaging:

250 ml. plastic bottles packed 48 per case,  
500 ml. plastic bottles packed 24 per case,  
1000 ml. plastic bottles packed 12 per case.



MADE IN USA

## CHOLINE



- If a diet is contaminated with aflatoxin B-1 then supplementing from 0.05% to 0.10% more choline to the diet has been shown to be beneficial to poultry
- extra choline will assist in removing synthesized fat out of the liver. Helps lipid transport thereby diminishing the fatty liver syndrome.

## BETAINE

Elklund et al., (2005) and Ratriyanto et al., (2009) carried out comprehensive reviews of the effects of feeding betaine to poultry. Results of nutrient digestibility, animal performance, metabolism and improvement in carcass leanness were reviewed and reported. These peer-reviewed papers illustrated the benefits of betaine as a feed additive capable of improving animal performance and slaughter characteristics. Studies included in these reviews were conducted with a particular scientific thought, and animal responses were the result of one of the betaine's modes of action. These were both influenced by the concentration of other methyl donors in the diet and the presence of either an osmotic or metabolic stress.

Several scientific publications have shown proof that betaine anhydrate can be used to overcome heat stress. Attia et al., (2009) showed that the impact of severe heat stress could partially be overcome by adding betaine to the diet in slow-growing broilers. Adding 1 kilogram betaine to the diet improved weight gain and feed conversion, compared to negative control treatment.

## COPPER & THIAMINE

- Supplementing 100 ppm (0.01%) copper and 5 to 10 ppm (.0005 to .001%) thiamine to the diet has been recommended to assist the bird in overcoming the negative effects of fusarium mold.
- the amount of copper in the water at bird level should be 0.005% and the amount of thiamine should be 0.0008%.
- adding 0.005% copper to the water at bird level has also been reported to benefit birds when less than 1 ppm aflatoxin B-1 is present in the diet.



## GLUTAMINE

The concentration of glutamine in "RESCUE PACK" in the water at bird level is recommended to be 0.3% (3,000 ppm).



This concentration provides a quantity of glutamine that should be sufficient to provide benefits to maintaining intestinal morphology and providing assistance in repairing any damage caused by mycotoxins.

- The glutamic acid will provide additional amounts in conjunction to that endogenously synthesized and required for the synthesis of glutathione.

## POLYPHENOLS

- The concentration in the water at bird level for use in "RESCUE PACK" would be 0.025%.
- strong antioxidant properties



### Guaranteed Analysis

<u>Ingredient</u>	<u>ml. / liter</u>
Glutamine	400
Other ingredients: Betaine, Copper, Thiamine, choline, polyphenols, HMTBa & Live Lactobacillus salivarius & Pediococcus parvulus on Aqueous carrier	Up to one liter

**Application:** For poultry in the drinking water

### Directions and recommended dose inclusion rates.

For use in poultry drinking water to ameliorate the effects of mycotoxicosis by boosting the immune system and biological biodegradation of many prominent mycotoxins .

Shake vigorously for 60 seconds before using. Dilute 250 ml. into 2,000 liters of de-chlorinated drinking water.



**Manufactured By**  
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## HMTBa



- The concentration of HMTBa (methionine hydroxy analogue: i.e., "2-hydroxy-4-methylthiobutanoic acid") (88% solution with 12% water), as a methionine source in "RESCUE PACK" in the water at bird level is recommended to be 0.20% (2,000 ppm). Since HMTBa is an 88% solution the concentration in the water at bird level will be 0.24%. The reason this concentration was selected is because the scientific literature has shown that the effects of mycotoxin stress (especially aflatoxin B-1) is able to be diminished by feeding methionine above the bird's requirement for this essential amino acid.
- Being an organic acid HMTBa promotes benefits by maintaining a lower gut pH leading to advantages in gut health and providing an environment for beneficial acid-forming microbes.
- Providing this extra source of methionine will provide the smaller chicks at hatch and during the early growing period with more of this limiting amino acid which will result in higher body weights for these smaller chicks.
- HMTBa is known to promote a higher concentration of reduced glutathione which relates to less oxidative damage.
- If water intake increases this would result in an increase in intake of HMTBa which would be of less consequence related to an overdose compared to DL-methionine.

