AROSOL CHEMICALS PRIVATE LIMITED

Manufacturer and Exporter of Natural remedies & Animal health Medicines

CHOLINE-H

Natural & Highly Bio-available Choline & Biotin

AROSOL CHEMICALS

WHY POULTRY AND FARM ANIMALS REQUIRE SUPPLEMENTATION OF CHOLINE

- They are now a days provided with high energy diet for faster gain in body weight. High energy diet is converted into fatty acids which require labile methyl groups and dietary emulsifier for digestion and metabolization of lipids.
- Layer birds remain under high estrogenic activity, which stimulates lipogenesis in the liver.
- Cage rearing of birds reduces physical activity, leading to availability of more energy for conversion into fatty acids.

FATTY LIVER SYNDROME

- **Fatty Liver Syndrome is a condition characterized by excessive deposition of fat in the liver.**
- **Fatty Liver Syndrome is mainly related to impaired energy metabolism and/or high intake of metabolisable energy causing conversion of excess energy to lipids in the liver through liponeogenesis.**
- **Fatty Liver Syndrome also occurs due to inadequate transportation of fat from liver to adipose tissues for storage.**

DISADVANTAGES OF SYNTHETIC CHOLINE

- Choline in inorganic form is very poorly absorbed from G.I. tract and hence less bioavailable.
- Synthetic choline chloride gets converted into trimethyl amine (TMA) in the body, which is toxic and confers fishy taint in eggs.
- Obnoxious smell of choline chloride is a matter of practical concern in processing units and feed mills.
- Corrosive nature of choline chloride induces mechanical damage to intestinal epithelium.

- **Vitamins generally do not interact with each other with the exception of choline chloride, which acts aggressively towards other vitamins. For the reason choline chloride is not included in vitamin premixes. The presence of highly hygroscopic compounds, such as choline chloride in the premix or diet can enhance oxidative destruction of other vitamins.**

Whitehead CC. In. Vitamins in Feedstuffs (Chapter-11). http://www.cabipublishing.org/Bookshop/Readingroom/0851994644/0851994644Ch11.pdf

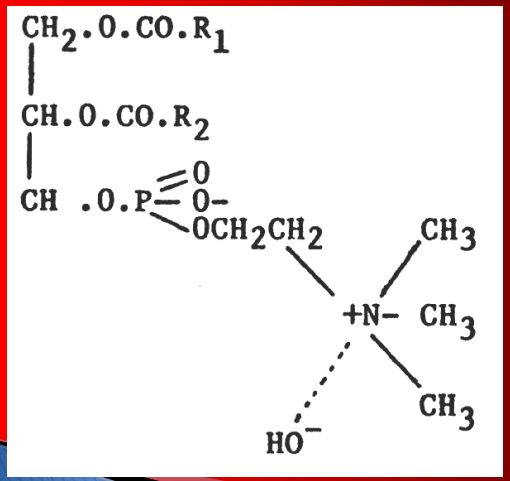
Leeson S and Zubair AK. Digestion in Poultry II. Carbohydrates, Vitamins and Minerals. http://www.novusint.com/Public/Library/TechPaper.asp

Stability of different vitamins in premixes/feeds containing hygroscopic synthetic Choline chloride

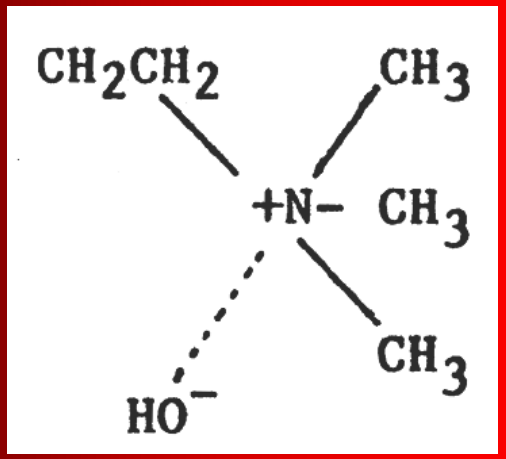
Vitamins	% Retention of activity		Average loss per month
	1 month	6 month	
Vitamin A	85	58	8
Vitamin D3	91	65	6
Vitamin E	95	82	3
Vitamin K	64	0	38
Thiamin	70	27	17
Riboflavin	95	56	9
Pyridoxine	92	56	9
Pantothenic acid	95	58	8
Niacin	95	58	8
Biotin	93	57	9
Vitamin B12	98	89	2
Folic Acid	85	43	12

CHOLINE-H

- Choline-h contains natural and stable choline and biotin in conjugated esterified form that helps in hepatic lipid metabolism and efficient dispersion of liver lipids.
- Esterification confers receptor recognition, improved bioavailability and reduced transformation of choline to TMA.



Esterified choline



Inorganic choline

Glycerols, phosphatidyl inositol and phosphatidylserine in Choline-h produce significant growth response as well as to augment the bio-activity of Choline-H.

The phosphatidylinositol of Choline-h, is associated with cholinomimetic bioactivity. Without both inositol and choline, the two important dietary emulsifiers, the dietary fats and bile become trapped in the liver, causing FLS, cirrhosis and impaired fat metabolism.

CHOLINE-H IS BETTER THAN SYNTHETIC CHOLINE CHLORIDE

For optimum energy utilisation, choline should be supplemented in esterified form. Thus unique combination of esterified choline, inositol, glycerol etc in Choline exert better physiological effects than synthetic choline chloride.

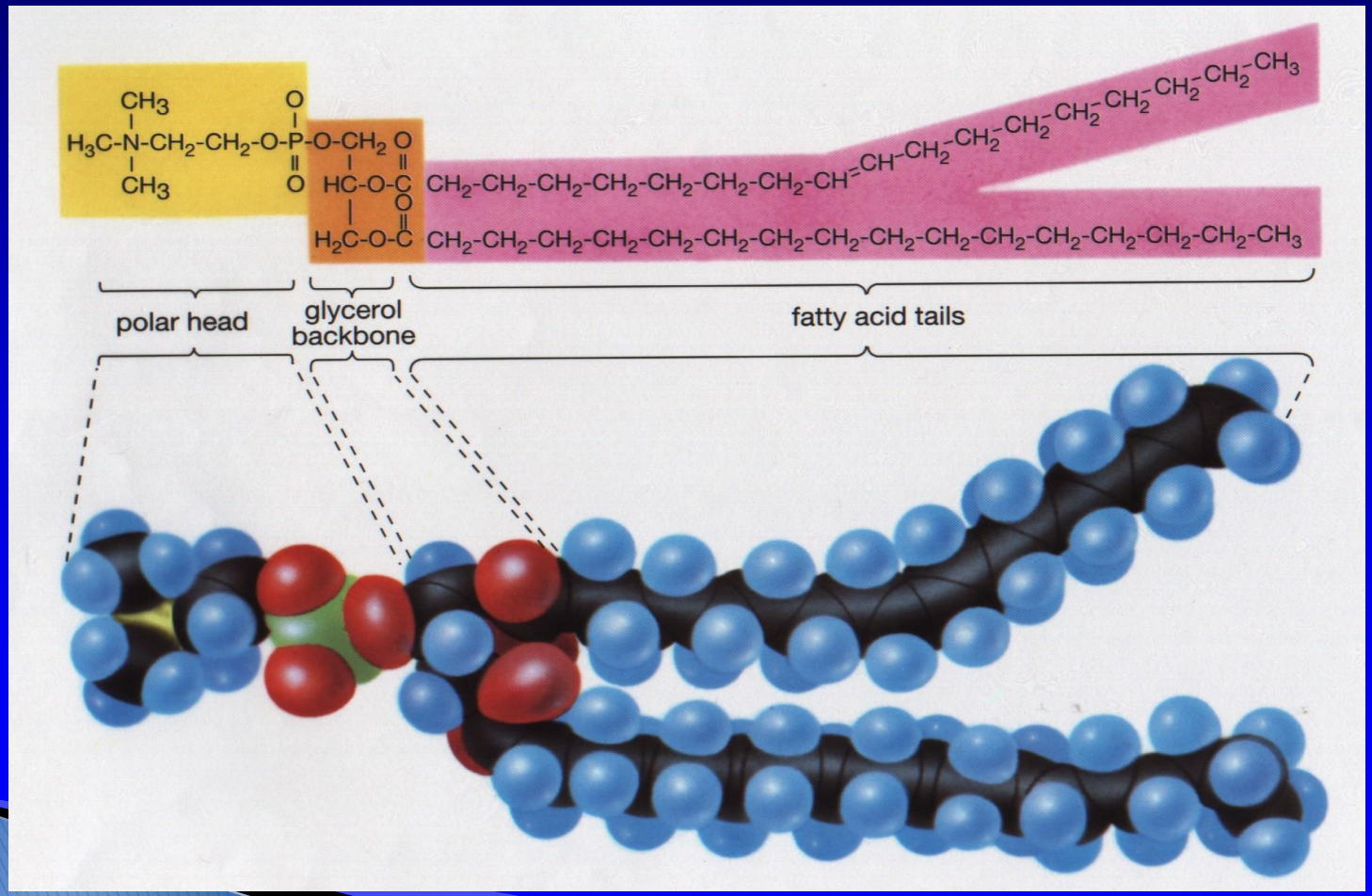
Choline-h is non-hygroscopic and does not cause deterioration of vitamins and other feed ingredients.

As reported in **The Lancet**, July 9, 1977, the subjects that took choline chloride, serum-choline levels reached their peak (86% above normal levels), but were not significantly higher than normal after 4 hours. However, in those who took phosphatidyl choline, the peak level (265% above controls) persisted for at least 12 hours. They reported that the consumption of phosphatidyl choline is much more effective than choline chloride in raising serum-choline levels.

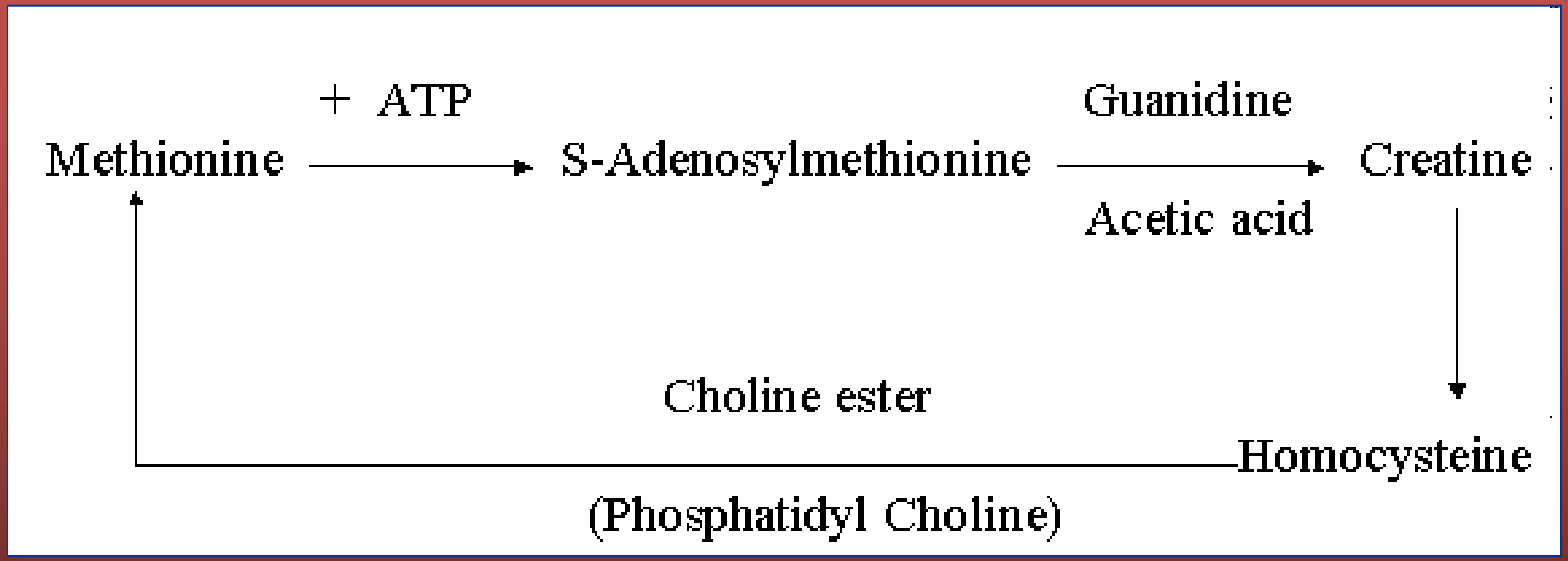
As reported by Von Allworden *et al* (1993) in The European Journal of Applied Physiology & Occupation, choline in esterified form is 25 times more bioactive than free choline.

An article in the journal **Science**, October 13, 1978, explained this vast difference. “The metabolic fate of choline consumption as phosphatidyl choline differs from that of choline chloride: A major fraction (approx 60%) of orally ingested choline chloride is rapidly degraded in the intestine by bacterial enzymes to trimethylamine, a hepatoxic compound with fishy odour. In contrast, the consumption of choline as phosphatidyl choline does not convert into TMA and causes a much larger increase in plasma choline, per molecule consumed, than choline chloride.”

Unlike free choline, Choline-h acts as emulsifier and helps emulsification of dietary fats/lipid, for their better absorption and utilization.



Methionine sparing action of Choline-h



In the energy cycle, a part of dietary methionine generally gets converted into homocysteine and is excreted through urine. Presence of choline esters in Cholimor helps in regeneration of methionine from homocysteine and thus spares dietary methionine, which is a costly feed ingredient, for other vital functions.

Feed Inclusion Rate

500g of Choline-h can replace 1kg of synthetic Choline chloride (60%) with better prevention of FLS and higher production performance.

For better results use above 500gms/ton of feed

PRESENTATION

20 Kg Double Liner paper bag
1 Kg aluminum Foil Pack