HIPP EVO
HIPPOCRATES EVOLUTION

Choline – Phosphatidylcholine, Choline citrate, Choline chloride, Choline bitarate, CDP-choline, Lecithin.

Common Indications:

- Fat metabolism & Homocysteine regulation
- Metabolism balance
- Precursor to our memory molecule acetylcholine. Enhances dopamine production.
- Neurological conditions including Alzheimer's disease, Manic/Depressive illness, memory enhancement, Parkinson's disease, Tardive dyskinesia
- Dietary supplement and pharmaceutical liposomal formulations

General Comments:

Choline is a unique element in that it is considered one of the B vitamins and we can get it from food but it also something our body can make internally. Often, we don't manufacture enough and so dietary sources or supplementation can be a great adjunct.

The primary dietary source of choline is in the form of the phospholipid known as phosphatidyl choline. CDP-choline is a newer form that absorbs easily and crosses into the brain much more efficiently than other forms of choline.

Benefits & Mechanism of Action:

- **Neurological Activities**: Precursor to and a component of the neurotransmitter acetylcholine, which is involved in regulating a wide range of neurological activities, including the functions of movement, coordination, and the stimulation of muscle contraction.

- **Cerebrocortical Functions**: Plays a critical role in the higher level cerebrocortical functions of thoughts, memory and intellect. Acetylcholine is often referred to as our "memory" molecule as it is very active in the hippocampus in servicing short term memory issues.

- **Biochemical Pathways**: Structurally contains three methyl groups that enable it to serve as a methyl donor in many important biochemical pathways. Choline and serine are both being used in dietary supplement and pharmaceutical manufacturing as lipotropes, which improve absorption and clinical effects of certain dietary supplements. (as phytosomes) and drugs like chemotherapy. [1]

- **Cells**: Part of phosphatidylcholine, a phospholipid that is a major structural component of cell walls and cellular membranes throughout the body.

- **Fat Metabolism**: As part of phosphatidylcholine, functions in the metabolism of fat and in the transport of fat from the liver. Phophatidylcholine is considered a lipotropic (fat emulsifying) agent.

- **Amino Acid and Protein Synthesis**: Converted to betaine and then functions in transmethylation reactions (methyl donor) in the synthesis of amino acids and proteins.

- **Memory and Cognitive Function**: Improvement with high dose phosphatidylcholine.

- **Tremor Reduction**: Useful in reducing the tremors associated with tardive dyskinesia and other diseases of the nervous system.

- **Dietary supplement manufacturing**: Quite a number of dietary supplements utilize phosphatidylcholine in the manufacture of liposomal products for increased bioavailability and clinical utility.

Dosage:

- DRI & ODI: (optimal & daily are the same): 500 – 3,500mg daily.

- Dietary Reference Intakes (DRI) are more current and beneficial and replace the old RDA classification.

- The Optimum Daily Allowance (ODA) represents a reference level beyond the RDI, and is often many times higher than the RDI to prevent diseases such as aging or cancer.

Symptoms of Deficiency:

- Those with an increased need for choline include:
  - Alzheimer's Disease
  - Memory disorders
  - Manic/Depression (Bipolar)
  - Parkinson's Disease
  - Tardive Dyskinesia

Cautions & Side Effects:

The potential for serious toxicity with choline is very low. Oral ingestion of large doses of choline salts such as choline chloride can produce nausea, diarrhea, and dizziness. Oral doses of choline can also produce an unpleasant "fishy" odor. This is due to gut bacteria metabolizing the choline and releasing the odorous substance trimethylamine.

Food Sources:

The richest source of dietary choline is egg yolk. Other good sources include organ meats, wheat germ, soybeans, peanuts, and legumes.

References:

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