

BENFOTIAMINE

A Blessing In Disguise

NUTRI-SPEC has always emphasized that we give you all the vitamins, minerals, and trace minerals in their most biologically active forms. That includes providing you with the B vitamins in their coenzyme form, instead of the B vitamin precursors supplied by ordinary supplements. Notable among those B vitamins in coenzyme form is thiamine pyrophosphate.

To our knowledge, there is only one other supplement supplier that offers vitamin B1 in the form of thiamine pyrophosphate instead of the more common thiamine hydrochloride or thiamine mononitrate. ----- Imagine our shock, our dismay (panic!) when we learned that thiamine pyrophosphate is no longer available --- not available anywhere --- not available anywhere in the world!! Clearly, with only NUTRI-SPEC and one other company using this source material, it just is not economical to produce.

We fully expected that when thiamine pyrophosphate disappeared from our supplement labels and was replaced with thiamine mononitrate, many of you would squawk incredulously --- and that is exactly what has happened. ----- But let us assure you, you can be at ease. Here is the story, and the reason why our loss of thiamine pyrophosphate can be considered a blessing in disguise

We are now “forced” (happily!) to add benfotiamine in its place. Thiamine pyrophosphate was so biologically active because it so well served the major function of vitamin B1 --- as a precursor to benfotiamine derivatives. Fortunately for NUTRI-SPEC, and for you and for your patients, at the same time thiamine pyrophosphate was no longer available, benfotiamine became available in a high quality form at a reasonable price. So, as you reexamine the label of Activator and our other supplements that contain vitamin B1, you will find thiamine mononitrate instead of thiamine pyrophosphate --- but, you will also find benfotiamine in significant quantity.

Benfotiamine is shown in the Literature to be a very effective facilitator of thiamine cocarboxylase absorption from the gut, as well as assimilation through cellular membranes, and it facilitates the action of thiamine cocarboxylase. Benfotiamine is more bioavailable than other forms of thiamine, and provides higher levels of thiamine in brain, liver, kidney, and muscle.

Bitsch, et al. Bioavailability assessment of the lipophilic benfotiamine as compared to water-soluble thiamine. Ann Nutr Metab, 292-296.

Panel on Food Additives and Nutrient Sources Added to Food (2008). Scientific Opinion: Benfotiamine, thiamine monophosphate, chloride and thiamine pyrophosphate chloride, as sources of vitamin B1 added for nutritional purposes to food supplements. The EFSA Journal.

Benfotiamine supplementation may increase intracellular levels of thiamine diphosphate, a cofactor of transketolase. Benfotiamine has been particularly studied in laboratory models of diabetes --- and it has shown beneficial results in diabetic neuropathy, retinopathy, and nephropathy.

Balakumar, et al. The multifaceted therapeutic potential of benfotiamine. Pharmacol Res, June 2010.

Raval, et al. Vitamin B and its derivatives for diabetic kidney disease. The Cochrane Database of Systematic Reviews, January 2015.

Benfotiamine also shows promise in geriatric patients with cognitive decline. It has even been studied in association with Alzheimer's disease.

Pan, et al. Long-term cognitive improvement after benfotiamine administration in patients with Alzheimer's disease. Neurosci Bull, December 2016.

One of the best summaries of the many nutritional and therapeutic benefits of benfotiamine is ----- Raj, et al. Therapeutic potential of benfotiamine and its molecular targets. Eur Rev Med Pharmacol Sci, May 2018. -----

The water-soluble vitamin thiamine forms an important part of the diet because of its role in energy metabolism. The protective effects of thiamine against diabetic vascular complications have been well-documented. However, slower absorption and reduced bioavailability is a major limiting factor for its clinical use.

[The maximum absorbable dose of vitamin B1 in any of its common forms is 4 mg. When people supplement with 1 mg of vitamin B1, they generally absorb almost all of it; when supplementing with 2 mg they get most of it; when supplementing with 3 mg they absorb barely more than 2 mg; when they supplement with 10, 50, or even 100 mg of vitamin B1, the most they can possibly absorb is something less than 4 mg. ----- What does that say about all the silly health food store supplements selling B complex garbage with as many as 50 to 100 mg of vitamin B1?]

To overcome the poor absorption and assimilation of vitamin B1, lipid-soluble derivatives of thiamine have been developed. Benfotiamine is regarded as the first choice based on its safety and clinical efficacy. Benfotiamine facilitates the action of thiamine diphosphate, a cofactor for the enzyme transketolase. The activation of transketolase enzyme moves the precursors of advanced

glycation end products (AGEs) towards the pentose phosphate pathway in the liver, thereby reducing the production of AGEs and their associated catabolic oxidative damage. Of course, AGEs are the major source of damage and accelerated aging in diabetics, but they contribute to some degree to premature aging in most patients --- particularly those who overconsume sugar.

The reduction of AGEs from benfotiamine subsequently decreases metabolic stress, which benefits vascular complications seen in diabetes. The many effects of benfotiamine on the AGE-dependent pathway is well-established.

However, several studies have shown that benfotiamine also modulates pathways other than AGE, such as the arachidonic acid pathway. The arachidonic acid pathway we can also call the omega 6 fatty acid pathway, or more appropriately in NUTRI-SPEC terms, as the inflammatory prostaglandin pathway. What this means is that benfotiamine protects against the oxidative (Dysaerobic) free radical damage from consuming polyunsaturated vegetable oils (HOHUM PUFAs --- heated, oxidized, hydrogenated and otherwise unmetabolizable polyunsaturated fatty acids).

Benfotiamine also helps control other major inflammatory metabolites, including NF-k-Beta, protein kinase B, mitogen activated protein kinases, and vascular endothelial growth factor receptor 2 (VEGF2) signaling pathways. -----
In summary --- benfotiamine is a major part of your NUTRI-SPEC arsenal to protect your patients from ImmunoNeuroEndocrine Stress and INFLAM-AGING.