Pantethine

D-BIS-(N-PANTOTHENYL-5-AMINOETHYL) DISULFIDE

Pantethine is not to be confused with simple calcium pantothenate/pantothenic acid (vitamin B5). Rather, the making of Pantethine is the very reason the body needs B5 in the first place. That is, pantothenic acid’s whole purpose in the body is to serve as a raw material for the synthesis of Pantethine, which is the “business end” of the critical Coenzyme A (CoA). Pantethine as CoA’s active site accomplishes the real “work” done by CoA. CoA, in turn, is used by the body in a wide variety of functions; including regulating cholesterol synthesis. Thus, optimal Pantethine levels are a key factor in maintaining optimal blood lipid balance.

The key factor determining the body’s Pantethine levels is the amount of conversion of pantothenic acid to Pantethine, which happens in the body. Because making Pantethine takes up a lot of the body’s resources, the body’s Pantethine–making machinery is strictly controlled by negative feedback loops designed to prevent the body from taking up too much of its resources in this compound. These feedback loops work like thermostats, turning the Pantethine–making machinery on when levels of its metabolite are low, and turning it off when levels are considered to be adequate.

The problem: not everyone’s Pantethine “thermostats” are set high enough to ensure optimal health – in particular, to support healthy cholesterol balance. This is often the result of a Scrooge–like “thriftiness” about investing the energy needed to run the CoA–making machinery, which goes back far into our evolutionary past. For our Paleolithic ancestors, keeping cholesterol in healthy balance was a much lower priority than breeding, keeping up a body fat layer for lean times, and avoiding predators. But it can also be at once the cause and the result of the metabolic disturbances associated with insulin resistance, the process through which the body’s cells stop responding to the hormonal command to take up blood sugar, leading to “Syndrome X” and non–insulin–dependent (“type–2”) diabetes. In such people, taking more pantothenic acid does not lead to the body making more Pantethine, just as buying more fuel for a furnace will not lead to more heat production as long as the thermostat is stuck on a low setting.

You can overcome the problems associated with the low thermostat setting in a home by installing space heaters in cold rooms, thereby bypassing the thermostat setting. Likewise, you can make up for a Pantethine–making “deficiency” by supplementing with Pantethine itself, directly correcting for any internal unbalance. Restoring optimal Pantethine levels can have a wide–ranging positive impact on your health.

Lipoprotein Balance

The use of Pantethine to support healthy levels of blood lipids and lipoproteins – such as total cholesterol, triglycerides, low–density lipoprotein (LDL – the “bad” cholesterol), and high–density lipoprotein (HDL – the “good” cholesterol) – is backed by nearly two decades of controlled clinical trials. These scientific studies show that supplementing the diet with Pantethine supports healthy lipoprotein balance. The clear evidence, demonstrated in people with a wide variety of cholesterol concerns, is that Pantethine supplements support the healthy functioning of the body’s cholesterol–making equipment, and thus proper levels of total cholesterol, triglycerides, LDL, and HDL. Importantly, pantothenic acid does not have these cholesterol–balancing effects.

Adrenal Function

The adrenal glands require CoA for the synthesis of the powerful hormones through which the body adapts to stress. Stress can therefore seriously deplete the body of vitamin B5, and supplemental pantothenic acid can help correct for this stress–induced deficiency. However, Pantethine provides much more powerful support for adrenal function than does pantothenic acid, more quickly restoring adrenal hormone production and normal biochemical function in the adrenal glands.

Liver Detoxification

The body uses two families of enzymes to transform toxins into less hazardous substances, which it can more easily excrete through the kidneys or the bile. The first family – the Phase I enzymes – “priming” the toxic molecule so that it can be more easily acted upon by the second family: the Phase II enzymes. Phase II enzymes do the real work of detoxification, binding the “primed” toxin to a “conjugating” molecule, which renders it less reactive and more easily dissolved.
One important subfamily of the Phase II enzyme family is the group that conjugates “primed” toxins using acetyl groups – a process which requires CoA. Toxins, which are neutralized using these CoA–dependent reactions: include aliphatic amines, aromatic amines such as sulfonamide drugs, and hydrazine. On the other hand, some toxic molecules – notably ethanol – are themselves rendered harmless by metabolizing them into acetyl groups, which are then taken up by CoA for use in other detoxification reactions or for use in the mitochondrial “power plants.”

It is therefore not surprising that **Pantethine supplements, by boosting CoA levels, support the detoxification of a variety of noxious molecules and protect the liver from many damaging chemicals.** For instance, **Pantethine** supplementation reduces the formation of the toxic alcohol byproduct acetalddehyde in healthy, nonflushing humans administered alcohol. Likewise, laboratory animals administered the liver toxin carbon tetrachloride suffer less fatty liver degeneration, have more normal liver enzyme levels, and suffer less free radical damage to their cellular membranes – with the protection exceeding that provided by large doses of pantothenic acid. **Pantethine** has also been shown to protect animals’ livers from the damaging effects of diets corrupted with peroxidized fats, reducing the over activation of liver enzymes and improving the animals’ chances of survival.

Preliminary studies in humans also suggest that **Pantethine may provide considerable support in fatty liver and hepatitis A.**

**Know How Much You’re Getting**
It’s important to note that **these effects are achieved at dosages of at least 600 milligrams per day of active Pantethine ion.** Most trials, in fact, have used 900 milligrams, although persons choosing to take more than one lipid–balancing nutrient may find that they get good results at the lower dose. But health–conscious persons should be careful in selecting a **Pantethine** product, making sure that they know what they’re getting. While **Pantethine** is still uncommon on the shelves of North American health food stores, some companies are selling it, and many **Pantethine** products contain far too little **Pantethine** to be effective.

Further, some products are confusingly labeled; making it difficult for consumers to tell how much active **Pantethine** ion is really in them. Some products, for instance, contain **Pantethine,** which has been “cut” with pantothenic acid. Some people who are concerned about their health, and have heard about **Pantethine,** are not familiar with the difference between it and pantothenic acid, and may confuse the two.

The labels on some other products provide the amount of **Pantethine** complex on the label, rather than the amount of active **Pantethine** ion: this is essentially the same difference as exists between the amount of calcium compound and the elemental calcium content in calcium supplements. This again can lead consumers to believe that there is much more true **Pantethine** in the product than there really is. Look for a label which clearly indicates both how much **Pantethine** complex, and how much **Pantethine** ion, the product contains. Some products use a complex, which contains as little as 20% active **Pantethine** ion. Thus, a product labeled “300 mg **Pantethine** (20%)” actually delivers just 60 mg of “elemental” **Pantethine**! Be sure that you know what you’re buying.

**Selected References**


**DISCUSSION:** Pantethine, a biological metabolite of pantothenic acid (vitamin B5), is a precursor to Coenzyme A, a critical factor in cellular energy production, Phase II detoxification, and the biosynthesis of numerous important orthomolecules (including sex and adrenal hormones and some neurotransmitters). Extensive research supports a role for Pantethine in supporting healthy lipoprotein balance.*

90 Vegi-Caps AOR04027
100% Vegetarian

**SUPPLEMENT FACTS:**

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<thead>
<tr>
<th>Serving Size</th>
<th>%DRI</th>
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<tr>
<td>1 Capsule</td>
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<tr>
<td>Pantethine</td>
<td>300 mg *</td>
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*(From 600mg pantethine complex)*

*Dietary Reference Intake not established.

Other ingredients: magnesium stearate. Capsule: vegetarian (hydroxypropylmethylcellulose).

AOR guarantees that no ingredients not listed on the label have been added to the product. Contains no wheat, gluten, corn, nuts, dairy, soy, eggs, fish, or shellfish.

**Suggested Use**
Take three capsules daily, or as directed by a qualified health consultant.

**Main Applications**
As reported by literature:
- Healthy lipoprotein balance
- Adrenal function
- Liver function

**Source**
Pharmaceutical synthesis

**Pregnancy / Nursing**
No studies; best to avoid.

**Cautions**
None known.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.