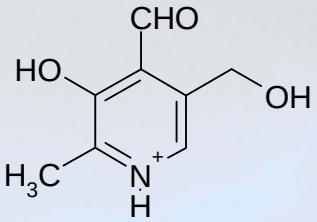
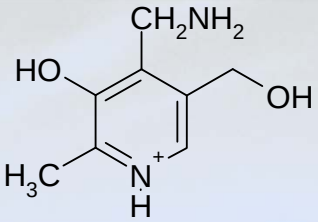
Pyridoxine 5’ phosphate

Pyridoxine

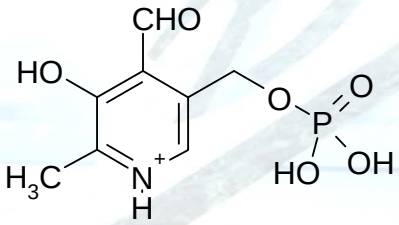


Pyridoxal



Pyridoxamine

Pyridoxal, pyridoxamine and pyridoxine are collectively known as vitamin B6. All three compounds are efficiently converted to the biologically active form of vitamin B6, pyridoxal phosphate. This conversion is catalyzed by the ATP requiring enzyme, *pyridoxal kinase*.



Pyridoxal Phosphate

Background: Pyridoxine 5’-phosphate is an essential cofactor in various transamination, decarboxylation, hydrolysis of glycogen and synthesis pathways involving carbohydrate, sphingolipid, amino acid, heme and neurotransmitter metabolism. It is also necessary for neurotransmitter production, playing a key role in dopamine, noradrenalin, serotonin, GABA and glutamate production.

The requirement for vitamin B6 in the diet is proportional to the level of protein consumption ranging from 1.4 – 2.0 mg/day for a normal adult. During pregnancy and lactation the requirement for vitamin B6 increases approximately 0.6 mg/day.

Pyridoxine deficiency causes blood, skin and nerve changes. This vitamin is unique in that both deficiency and excess can use peripheral neuropathy.

Kyowa Hakko Europe GmbH
Daiichi Fine Chemical Division

Am Wehrhahn 50
40211 Düsseldorf / Germany

Tel: +49 (0)211 - 175 45 0
Fax: +49 (0)211 - 175 45 447

e-Mail: dfc@kyowa.de
Website: www.kyowa.eu/daiichi

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Pathophysiology: After absorption, pyrixodine, pyridoxamine and pyridoxal are transported into hepatic cells by facilitated diffusion. Pyridoxal kinase phosphorylates pyridoxine and pyridoxamine, after which they are converted to pyridoxal 5'-phosphate (PLP) by a flavin-dependent enzyme. PLP either remains in the hepatocyte, where it is bound to an apoenzyme, or it is released into the serum, where it is tightly bound to albumin. Free pyridoxal is degraded by alkaline phosphatase, hepatic and renal aldehyde oxidases and pyridoxal dehydrogenase.

Summary:

In order for vitamins to be utilized by the body, they must first be converted into their active coenzyme forms. The active form of vitamin B6 is Pyridoxal-5-phosphate or P5P, this active form allows for the best absorption, because it is ready to go to work immediately. Many B6 supplements are the inactive pyridoxine HCL form. In some cases supplementation of this form singularly caused a reversible numbness & tingling of the extremities.

It's the P5P our bodies really need to break down and use fats, proteins and carbohydrates to make red blood cells and antibodies, to help the digestive and nervous systems function, and to maintain healthy skin. But some folks have trouble converting pyridoxine into P5P. Those susceptible to a deficiency include some breast-fed infants, elderly persons on a poor diet, and women on estrogen-containing oral contraceptive pills. B6 has recently been found to benefit the autistic and is thought, the P5P form may even provide more benefit.

Also, people such as: pregnant and nursing mothers, the elderly, the autistic and babies at risk of SIDS (Sudden Infant Death Syndrome). P5P is the only form of B6 that the fetus and newborn baby can use. In premature babies, who are more susceptible than full-term babies to SIDS, the use of pyridoxine form of B6 can result in irreversible central nervous system damage. And lack of P5P can predispose a surviving premature infant to artherosclerosis in later life. In addition, the fact that B6 benefits some persons with Carpal Tunnel Syndrome and not others, we think, may well be traced to the person's ability or inability to make P5P from pyridoxine.

SYMPTOMS OF B6 DEFICIENCY:

- Depression
- Nervousness
- Irritability
- Slow learning
- Poor dream recall
- Dizziness
- Fatigue
- Cracks around mouth & eyes

- Dermatitis & acne
- Inflamed eyes
- Facial oiliness
- Stillbirths from deficiency during pregnancy
- Decreased lymphocytes
- Decreased vitamin C levels
- PMS
- Increased sensitivity to sound
- Water retention
- Decreased resistance to infection
- Impaired wound healing
- Poor appetite
- AM nausea/vomiting
- Dental cavities
- Hair loss
- Impaired calcium utilization
- Decreased absorption of copper
- Decreased iron status
- Decreased vitamin B12 absorption
- Arthritis
- Muscular weakness
- Neuritis
- Carpal tunnel syndrome
- Temporary limb paralysis
- Numbness & tingling in the limbs
- Anemia
- Elevated homocysteine levels
- Seizures
- Low blood sugar
- Low glucose tolerance
- Abdominal pain

Product information:

Product name:	Pyridoxsal-5-Phosphate (Pyridoxsal Phosphate) (C8H10NO6 P. H2O: MW 265.16)
Specification:	Japanese Pharmacopoeia Codex (JPC)
Packaging:	25kg fiber drum, 1kg tin
Production site:	SEKISUI MEDICAL CO., LTD. (GMP conformation facility in Japan)