



Inositol: *Inositol or cyclohexane-1,2,3,4,5,6-hexol, Inositol hexaniacinate (inositol hexanicotinate), Myo-Inositol, or cis-1,2,3,5-trans-4,6-cyclohexanehexol*

Common Indications:

- Metabolic syndrome; insulin resistance
- Diabetic neuropathy
- Obsessive-compulsive disorder
- Panic attacks
- Depression
- Polycystic ovary syndrome (PCOS)
- Psoriasis associated with lithium therapy

General Comments:

Inositol is part of the water-soluble B vitamin complex and easily found in many plants. Inositol is also synthesized in the intestinal tract by the beneficial flora.^{1,2} Inositol occurs as a component of phospholipids in animal tissue.

The popular “no flush” niacin that we read about is formed from mixing inositol with 6 niacin (Vitamin B3) molecules to form inositol hexaniacinate or inositol hexanicotinate. This form of no flush niacin does NOT have the same impact as true niacin and does nothing to alter or reduce adverse lipid panels.

Benefits & Mechanism of Action:

Metabolic syndrome; insulin resistance

As part of phospholipids in cellular membranes, phosphatidylinositol helps to mediate cellular responses to external stimuli. Myo-inositol may be helpful in improving insulin resistance and decreasing symptoms of metabolic syndrome.³ A study of postmenopausal women found that myo-inositol supplementation improved triglyceride levels, HDL levels, and diastolic blood pressure.^{3,4} When the observations were collected at one year, it was found that the benefits were greater the longer that the women were treated.⁴

Increasing urinary concentrations are directly correlated to reduced insulin receptor

activity and can be used as a biomarker for insulin resistance.^{5,6}

Diabetic neuropathy

Inositol Inositol is used in the development of peripheral nerves and has shown to be effective in the treatment of diabetic neuropathy.^{3,7,8}

Inositol was found to be more effective than placebo when used in patients with diabetic neuropathy associated erectile dysfunction.⁹

Obsessive-compulsive disorder

A double blind study of myo-inositol, at 18 grams per day, showed a significant reduction in symptoms of OCD, non-inferior to a selective serotonin reuptake inhibitor (SSRI), with less side effects.^{10,11}

Panic attacks

One study showed 18g of inositol daily was found to be as effective as fluvoxamine, an SSRI, in reducing anxiety symptoms associated with panic.^{12,13,14} Inositol does not appear to be effective for panic disorders associated with PTSD.¹⁵

Depression

A human study assessed patients with depression and found that 12g of inositol daily for 4 weeks showed an improvement of depression symptoms.^{16,17} It appeared to be more helpful in females.^{16,17}

Polycystic ovary syndrome (PCOS)

Myo-inositol is reported to help restoring metabolic, hormonal and spontaneous ovarian activity in those with PCOS.¹⁸ Studies have shown that doses greater than 200mg daily improve oocyte and embryo quality prior to in vitro fertilization, improve androgen associated symptoms, improve glucose metabolism, restore menstruation in those who had lost cycles due to PCOS, and increase pregnancy rates.^{19,20,21,22,23,24,25} It has also been shown to help with hirsutism associated with PCOS.^{26,27}

Psoriasis associated with lithium therapy

Inositol supplementation has been shown to improve peripheral side effects of lithium therapy, including flares in psoriasis, without interfering with lithium's mechanism of action in the brain.^{28,29}

Dose: in different applications:

General

- 1,000 mg – 18 grams daily in divided doses
- Inositol hexaniacinate – 540 mg daily

Obsessive-Compulsive disorder/Panic Attacks

- 18g daily^{10,11,12,13,14}

Depression

- 12g daily^{16,17}

PCOS

- 200-4,000mg once daily before breakfast^{19,20,21,22,23,24,25}

Symptoms of Deficiency:

No inositol deficiency has been identified in humans. A deficiency is not likely because of its widespread occurrence in foods and the body's ability to synthesize inositol from glucose-6-phosphate.

The following symptoms have been associated with reduced inositol intake

- Anxiety
- Depression
- Difficulty falling asleep
- Uterine fibroids
- PMS

Food and supplements that may decrease inositol include:

- Caffeine

Cautions & Side Effects:

Medication interactions

Medications with increased effects while taking inositol include:

- Oral contraceptives - in the treatment of PCOS
- Melatonin - melatonin increases the effects of inositol supplementation

Medications that can decrease the amount of inositol include:

- Antibiotics
- Lithium

Food Sources:

Inositol occurs in foods in three different forms: as free myo-inositol, phytic acid, and inositol-containing phospholipids. The richest plant sources of myo-inositol are cantaloupe and oranges, followed by seeds such as beans, grains, and nuts. The richest animal sources are organ meats. Free myo-inositol predominates in brain and kidney, whereas phospholipid-inositol is concentrated in skeletal muscle, heart, liver, and pancreas.

Nutrient Interactions:

Calcium

Phytic acid or inositol hexaphosphate, which is the form of inositol that occurs in plants, binds with divalent cations decreasing the absorption of these minerals from the gastrointestinal tract.

Zinc

Phytic acid or inositol hexaphosphate, which is the form of inositol that occurs in plants, binds with divalent cations decreasing the absorption of these minerals from the gastrointestinal tract.

Iron

Phytic acid or inositol hexaphosphate, which is the form of inositol that occurs in plants, binds with divalent cations decreasing the absorption of these minerals from the gastrointestinal tract.

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Metabolic syndrome; insulin resistance

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Obsessive-Compulsive Disorder

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Dosage - Obsessive-Compulsive disorder/Panic Attacks

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