NATURAL MEDICINES
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INOSITOL

Also Known As:

Antialopecia Factor, Cyclohexitol, Dambrose, D-Myo-Inositol, Facteur Anti-alopécique, Inose, Inosite, Inositol Monophosphate, Lipositol, Meso-Inositol, Méso-Inositol, Monophosphate d'Inositol, Mouse Antialopecia Factor, Myo-Inositol, Vitamin B8, Vitamine B8.
CAUTION: See separate listings for Inositol Nicotinate and IP-6.

Scientific Name:

Hexahydroxycyclohexane, synonyms 1,2,3,4,5,6-Cyclohexanehexol, cis-1,2,3,5-trans-4,6-Cyclohexanehexol; D-chiro-inositol, synonym (+)-chiroinositol, 1,2,5/3,4,6-inositol, (1S)-inositol, (1S)-1,2,4/3,5,6-inositol.

People Use This For:

Orally, inositol is used for diabetic neuropathy, conditions associated with disorders of fat transport and metabolism, panic disorder, high cholesterol, insomnia, cancer, depression, schizophrenia, Alzheimer's disease, attention deficit-hyperactivity disorder (ADHD), autism, treating lithium-induced side effects, psoriasis, and promoting hair growth. Inositol is also used orally for treating conditions associated with polycystic ovary syndrome, including anovulation, hypertension, hypertriglyceridemia, and elevated serum concentrations of testosterone.
Parenterally, inositol is used for treating respiratory distress syndrome in premature infants.

Safety:

POSSIBLY SAFE ...when used orally and appropriately. Inositol has been used in amounts up to 12 grams per day for up to 4 weeks, and 6 grams daily for 10 weeks with no significant adverse effects (2184, 2185, 2187).
CHILDREN: POSSIBLY SAFE ...when used parenterally and appropriately for treating respiratory distress syndrome in premature infants (2191, 2192).
PREGNANCY: Insufficient reliable information available; avoid using.
LACTATION: Insufficient reliable information available; avoid using. Breast milk is rich in endogenous inositol (2138); however, the effects of exogenously administered inositol are not known.

Effectiveness:

POSSIBLY EFFECTIVE
Lithium-induced side effects. Taking inositol orally seems to improve psoriasis associated with lithium. But it doesn't seem to help psoriasis in patients who aren't taking lithium (11972). Additionally, preliminary evidence suggests that taking inositol

orally is not beneficial for reducing lithium-induced adverse effects, including tremor, thirst, and thyroid and adrenal function (2027).

Obsessive-compulsive disorder (OCD). There is some evidence that OCD patients who receive inositol orally for 6 weeks have significant improvement, based on Yale-Brown Obsessive Compulsive Scale scores, compared to placebo (2186).

Panic disorder. Taking inositol orally seems to be helpful for treating panic disorder with or without agoraphobia. Inositol seems to significantly reduce the severity and rate of panic attacks and the severity of agoraphobia over 4 weeks of treatment (2184). Some research suggests that it may be as effective as fluvoxamine (Luvox) for treatment of panic disorder (10387). Large scale, long-term trials are needed to confirm inositol's potential benefit in panic disorders.

Polycystic ovary syndrome (PCOS). Taking the inositol isomer D-chiro-inositol orally seems to decrease serum triglyceride and testosterone levels, modestly decreases blood pressure, and induces ovulation in obese women with polycystic ovary syndrome (2028).

Respiratory distress syndrome. Administering inositol parenterally as a nutritional supplement seems to improve survival and symptoms in premature infants with respiratory distress syndrome. Inositol seems to lower inspiratory oxygen requirements, mean airway pressure, and the incidence of bronchopulmonary dysplasia in premature infants not receiving surfactant when compared to placebo and glucose (2191, 2192).

POSSIBLY INEFFECTIVE

Alzheimer's disease. Taking inositol orally doesn't seem to improve symptoms of Alzheimer's disease (2189).

Autism. Taking inositol orally doesn't seem to improve symptoms of autism (2190).

Depression. Although limited research suggests that depressed patients receiving inositol for 4 weeks may improve, patients initially responding to inositol seem to relapse rapidly upon discontinuation of treatment (2026, 2185). Inositol given in combination with SSRIs doesn't improve the effectiveness of SSRIs or improve depression in SSRI treatment failures (2025, 10851).

Schizophrenia. Taking inositol orally doesn't seem to improve symptoms of schizophrenia (2188).

LIKELY INEFFECTIVE

Diabetic neuropathy. Taking inositol orally doesn't improve the symptoms of diabetic neuropathy (2193, 2194, 2195).

INSUFFICIENT RELIABLE EVIDENCE to RATE

Attention deficit-hyperactivity disorder (ADHD). Preliminary evidence suggests inositol might not help improve ADHD symptoms (2187). More evidence is needed to rate inositol for this use.

Mechanism of Action:

Endogenous inositol is an essential component of cell membrane phospholipids. It has weak lipotropic activity, and can move fat out of liver and intestine cells (2187). Inositol is a constituent of the intracellular phosphatidyl inositol second messenger system, which is linked to serotonin, norepinephrine, and cholinergic receptors (10850, 11972). Inositol has a variety of stereoisomers, including myo-inositol and D-chiro-inositol. Myo-inositol is the most abundant form in the central nervous system (CNS). Biological function varies among the isomers (2047, 2048). Inositol might reverse desensitization of serotonin receptors (2187). Limited clinical evidence suggests exogenous inositol may have benefits similar to selective-serotonin-reuptake inhibitors

(SSRIs) in conditions such as panic disorder, depression, and obsessive-compulsive disorder. Researchers think that D-chiro-inositol isomer induces ovulation in women with polycystic ovary syndrome by improving insulin sensitivity. Reduced insulin resistance is also thought to be responsible for improving other symptoms associated with polycystic ovary syndrome, including hypertension, hyperlipidemia, type 2 diabetes, obesity, and increased serum testosterone concentrations (2028). Additionally, patients with insulin resistance, including those with impaired glucose tolerance and type 2 diabetes, might have D-chiro-inositol deficiency (2028).
Supplemental inositol seems to help psoriasis that is made worse or triggered by lithium. The mechanism is unknown, but lithium seems to cause a reduction of inositol in both the brain and other tissues. Supplementation with inositol doesn't seem to adversely affect the efficacy of lithium for bipolar disorder (11972).

Adverse Reactions:

Orally, inositol is generally well tolerated. It can cause nausea, tiredness, headache, and dizziness (10387, 11972).

Interactions with Herbs & Supplements:

None known.

Interactions with Drugs:

None known.

Drug Influences on Nutrient Levels and Depletion:

CARBAMAZEPINE (Tegretol): Carbamazepine reduces inositol levels in the brain, probably by inhibiting an enzyme involved in inositol synthesis (15515, 15516, 15517). Levels of inositol in the systemic circulation are determined primarily by dietary intake (15516), and are unlikely to be affected significantly by carbamazepine. The effect of carbamazepine on brain inositol levels might contribute to its therapeutic effect in bipolar disorder (15515, 15516). The effect of inositol supplements on the efficacy of carbamazepine is unknown. Until more is known, patients taking carbamazepine should avoid or use inositol supplements cautiously.

LITHIUM: Lithium reduces inositol levels in the brain by inhibiting the inositol monophosphatase enzyme, which is involved in synthesis of inositol (15513, 15514, 15515, 15516). Levels of inositol in the systemic circulation are determined primarily by dietary intake (15516), and do not seem to be significantly affected by lithium. The effect of lithium on brain inositol levels might contribute to its therapeutic effect in bipolar disorder (11972, 15514, 15515, 15516). It has also been suggested that reduction of tissue inositol levels might contribute to adverse effects of lithium (11972). A small study reported beneficial effects of inositol supplements in lithium-induced psoriasis (11972). Preliminary animal data also suggest that inositol supplements could reduce the therapeutic benefit of lithium (15517). Preliminary data also suggest that dietary inositol restriction in humans augments the efficacy of lithium (15513). Until more is known, patients taking lithium should avoid or use inositol supplements cautiously.

VALPROIC ACID (VPA, valproate, Depakene, Depakote): Valproic acid reduces inositol levels in the brain by inhibiting the inositol phosphate synthase enzyme, which is involved in synthesis of inositol (15515, 15516, 15517). Levels of inositol in the systemic circulation are determined primarily by dietary intake (15516), and are unlikely to be affected significantly by valproic acid. The effect of valproic acid on brain inositol levels might contribute to its therapeutic effect in bipolar disorder (15515, 15516). The effect of inositol supplements on the efficacy of valproic acid is unknown. Until more is known, patients taking valproic acid should avoid or use inositol supplements cautiously.

Interactions with Foods:

MINERALS: Phytic acid, the form of inositol found in foods, may interfere with absorption of minerals, especially calcium, zinc, and iron (16).

Interactions with Lab Tests:

None known.

Interactions with Diseases or Conditions:

BIPOLAR DISORDER: There is some concern that excessive consumption of inositol might exacerbate bipolar disorder. In one case, a 36-year-old man with adequately controlled bipolar disorder was hospitalized with symptoms of mania after consuming several cans of an energy drink containing inositol, caffeine, taurine, and other ingredients (Red Bull Energy Drink) over a period of 4 days (14302). It is not known if this is related to inositol, caffeine, taurine, a different ingredient, or a combination of the ingredients.

Dosage/Administration:

ORAL: For depression, inositol 12 grams per day has been used (2185). For panic disorder, 12 to 18 grams per day has been used (2184, 10387). For obsessive-compulsive disorder, inositol 18 grams per day has been used (2186). For treating symptoms associated with polycystic ovary syndrome, D-chiro-inositol 1200 mg per day has been used (2028). For treating lithium-related psoriasis, 6 grams daily has been used (11972).

PARENTERAL: For respiratory distress syndrome in premature infants, inositol 80 mg/kg parenterally per day has been used (2191).

Editor's Comments:

None.

This monograph was last reviewed on 07/15/2011 and last updated on 07/15/2011. Monographs are reviewed and/or updated multiple times per month and at least once per year. If you have comments or suggestions on something that should be reviewed or included, please tell the editors. For details about our evidence-based approach, see our Editorial Principles and Process.

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