NATURAL MEDICINES
COMPREHENSIVE DATABASE

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GLUTATHIONE

Also Known As:

gamma-Glutamylcysteinylglycine, gamma-L-Glutamyl-L-cysteinylglycine, L-Glutathione, GSH.

Scientific Name:

N-(N-L-gamma-Glutamyl-L-cysteinyl)glycine.

People Use This For:

Orally, glutathione is used for treating cataracts, glaucoma, preventing aging, treating or preventing alcoholism, asthma, cancer, heart disease (atherosclerosis and hypercholesterolemia), hepatitis, liver disease, immunosuppression (including AIDS and chronic fatigue syndrome), maintaining immune function, memory loss, Alzheimer's disease, osteoarthritis, Parkinson's disease, and detoxifying metal and drugs.
Inhaled, glutathione is used for treating lung diseases, including idiopathic pulmonary fibrosis, cystic fibrosis, and lung disease in individuals with HIV disease.
Intramuscularly, glutathione is used for preventing toxicity of chemotherapy and for treating male infertility.
Intravenously, glutathione is used for preventing anemia in patients undergoing hemodialysis, preventing renal dysfunction after coronary bypass surgery, treating Parkinson's disease, improving blood flow and decreasing clotting in individuals with atherosclerosis, treating diabetes, and preventing toxicity of chemotherapy.

Safety:

POSSIBLY SAFE ...when used orally (5361, 5362). ...when used by inhalation (9, 5367, 5368, 5369). ...when used intramuscularly (5374, 5375, 5384). ...when used as an intravenous injection (5344, 5354, 5357, 5358, 5359, 5360, 5373, 5374, 5375, 5376, 5377) (5378, 5379, 5380, 5381, 5382, 5383).
PREGNANCY AND LACTATION: Insufficient reliable information available; avoid using.

Effectiveness:

POSSIBLY EFFECTIVE

Chemotherapy toxicity. Administering glutathione by intravenous injection seems to help prevent chemotherapy toxicity (5373, 5374, 5375, 5376, 5377, 5378, 5379, 5380, 5381, 5382, 5383).
There is insufficient reliable information available about the effectiveness of glutathione for its other uses.

Mechanism of Action:

Glutathione is primarily synthesized in the liver (5387, 5388). It is involved in DNA synthesis and repair, protein and prostaglandin synthesis, amino acid transport, metabolism of toxins and carcinogens, immune system function, prevention of oxidative cell damage, and enzyme activation (5344, 5386). Cellular glutathione levels increase during exercise (5398, 5386). Glutathione deficiency is associated with aging, age-related macular degeneration (AMD), diabetes, lung and gastrointestinal disease, pre-eclampsia, Parkinson's disease and other neurodegenerative disorders, and poor prognosis in AIDS (5344, 5346, 5347, 5348, 5349, 5350, 5351, 5352, 5353, 5354, 5393) (5394, 5395, 5396, 5397). Although glutathione is present in fruits, vegetables, and meats, the levels in the body do not seem to correlate to dietary intake. This suggests that oral glutathione might be inactivated by peptidases in the gut (5344). Despite evidence that suggests that glutathione is bioavailable in rodents (5363, 5364), oral doses of 3 grams cause negligible increases in human plasma levels (5362). Preliminary evidence suggests glutathione intake from fruits and vegetables might be associated with a reduced risk of pharyngeal cancer (5345). In individuals with cirrhosis, oral glutathione has no effect on liver function tests (5361).

Glutathione may inhibit the activity of enzymes that help the flu virus colonize cells lining the mouth and throat. Flu-infected mice fed glutathione-enriched drinking water have lower tissue virus levels than untreated mice. Human studies are needed to determine the effects of glutathione on flu infection (5061).

Currently, researchers are investigating whether administering glutathione precursors, such as glutamine and n-acetylcysteine, might increase glutathione levels (5344, 5389, 5392).

Adverse Reactions:

None reported.

Interactions with Herbs & Supplements:

None known.

Interactions with Drugs:

None known.

Drug Influences on Nutrient Levels and Depletion:

ACETAMINOPHEN: Drugs that deplete glutathione, such as acetaminophen, might decrease the therapeutic effects of glutathione (5394).

ALCOHOL (Ethanol): Drugs that deplete glutathione, such as alcohol, might decrease the therapeutic effects of glutathione (5394).

Interactions with Foods:

None known.

Interactions with Lab Tests:

None known.

Interactions with Diseases or Conditions:

ASTHMA: Inhaled (nebulized) glutathione can cause bronchospasm in individuals with asthma (5372).

Dosage/Administration:

ORAL: Supplemental doses range from 50-600 mg per day, with a typical dose of 250 mg daily; however, orally administered glutathione is probably not bioavailable (5362).

INHALATION: A common dose is 600 mg, aerosolized twice daily (5367, 5368, 5369).

INTRAMUSCULAR: For infertility, 600 mg every other day for 2 months has been used (5384). As a chemotherapy adjunct, 600 mg on days 2 through 5 of chemotherapy has been used (5374, 5375).

INTRAVENOUS: As a chemotherapy adjunct, 2.5 grams or 1.5 grams/meter squared immediately prior to chemotherapy has been used (5373, 5374, 5375, 5376, 5377, 5378, 5379, 5380, 5381, 5382, 5383).

Editor's Comments:

The role of glutathione is being studied in the wasting of AIDS, heavy metal poisoning, sepsis, myocardial ischemia, renal dysfunction and nephrotoxicity, liver disorders, corneal disorders, and eczema (9, 5344, 5345).

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