



GLUTATHIONE- small protein composed of 3 amino acids called cysteine, glutamic acid and glycine, produced normally by the body in response today's environment such as pollution in the air we breathe, water we drink, chemicals and pesticides in the food we eat that cause damages in our cells and system. Glutathione is often referred to as Master Anti-oxidant in the body. "small molecule made up of linked amino acid and anti-oxidant naturally produced in the body. it has been widely heralded for its importance for good health and long life.

Glutathione in increased dose posts a remarkable good side effect such as SKIN WHITENING. the greater the exposure to toxins, the faster the body uses up its supply glutathione. Without the protection of Glutathione, cells die at faster rate, making people age quicker and putting them at risk for toxin induced diseases including cancer.

PRIMARY BIOLOGICAL FUNCTION :

- * to act as a non-enzymatic reducing agent to help keep cysteine thiol side chain in reduce state on surface of proteins
- * Involved in the synthesis & repair of DNA
- * helps to recycle vit C and vit E
- * blocks Free radical damage
- * enhances the anti-oxidant activity of vit C
- * facilitates the transport of amino acids
- * plays a critical role in the detoxification of harmful compounds
- * is the base material for several other key antioxidant enzyme system such as, glutathione - peroxidase, glutathione - reductase and glutathione - transferase-Body (AID) Anti-oxidant Immune booster detoxifier THEREFORE, declines in glutathione concentrations in intracellular fluids correlate directly with indicators of aging.

WHAT CAN GLUTATHIONE DO FOR YOU :

- * whitens the skin
- * Dark spot remover
- * Prevent/remove pimples and pimple marks
- * Anti-aging and anti - wrinkles
- * Makes your skin smooth, fresh and radiant
- * Enhance healing of wounds. Nourishes skin

GLUTATHIONE AS THE MASTER OXIDANT :

- * Improve immune system.
- * Helps in preventing cancer specially liver cancer.
- * Is required in detoxifying nicotine.
- * Helps our liver in detoxifying our body.
- * Plays important role in cancer prevention & treatment.
- * Appears to protect against the dangers of heart diseases, premature aging and chronic illness
- * Increase sperm count for men with low sperm counts.
- * Low Glutathione level are found in immune compromised individuals, Neuro-degenerative diseases such as multiple sclerosis, ALS, Alzheimer, and Parkinson's disease, arteriosclerosis, male infertility, pregnancy complications, cataracts, damage from many pharmaceutical drugs, cancer and poor survival rate for patients with AIDS.

MECHANISM OF ACTION :

- * support of antioxidant process
- * modify the normal pigmentation pathway from eumelanin to pheomelanin
- * **SIDE-EFFECTS:** Generally considered to be free of side-effects. No untoward side-effects nor interactions with oral administration reported even in prolonged use. It is SAFE. Classified as **Food Supplement** not a herbal. Made from genetically synthesized molecules. The only reported side-effect is **SKIN WHITENING** when taken in increased doses.

WHO NEEDS GLUTATHIONE :

- * smokers
- * alcoholic drinkers
- * with low immune system



- * with low immune system
- * with thyroid problems
- * has cataracts- with low sperm counts- with cancer- those who want to possess fairer and whiter skin

LOW GLUTATHIONE LEVELS ARE FOUND IN :

- Aging population
 - Immunocompromised individuals
 - With atherosclerosis
 - Male infertility
 - Pregnancy complications
 - Hyperthyroidism
 - Liver problems
 - Cataracts
 - Alzheimers
 - Parkinsons, M.S.-Results of oxidative stress due to diseases, drugs pollution, radiation and smoking
- WHAT IS THE DOSAGE?**
Dosage computation as ANTIOXIDANT / ANTI-AGENT:
10mg/kg/day
Ex. 50 Kg female 50 kg body weight x 10 mg= 500 mg/day

MAINTENANCE DOSE:As antioxidant and as anti-aging dose: 10mg per Kilogram bodyweight per day. as skin whitener: 20-40mg per kilo bodyweight per day in 2-3 divided doses

Note: Best taken with preferably 30 minutes before or after meals. Should be taken together with Vitamin C at least equal or twice the dose of glutathione taken.

DEFINITION OF TERMS:

1. ANTIOXIDANT- compound that halts oxidative stress by donating its electrons to neutralize free radicals before they can cause damage.
2. OXIDATIVE STRESS- a damaging condition that occurs when there are too many free radicals and not enough antioxidants to neutralize them.
3. FREE RADICAL- a molecule or molecule fragment with an unpaired electron produced by the body and pollutants that causes damage to the body.

IS IT SAFE IN THE LIVER? The higher GSH content, the greater the liver's capacity to detoxify harmful chemicals. "When exposed to chemicals which damages the liver, concentration of GSH decrease, Reduction in GSH makes liver susceptible to damage.

GLUTATHIONE AND VITAMIN C: A person taking L glutathione should take Vitamin C two to three times more than the dose of L Glutathione.

WHY IS VITAMIN C NEEDED? This is to keep Glutathione in its absorbable or reduced form. This will release the potential of Vitamin C's derivatives whitening properties. Glutathione has no known side effects or interactions even if given orally in prolonged use.

Abstract - 1

Glutathione as a depigmenting agent : an overview

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