

2. Precis, Glutathione ©

What is it?

What Are Its Medical Functions in Your Body?

What Threatens Its Normally Healthful Concentrations Inside Cells? ©

WHAT IS GLUTATHIONE?

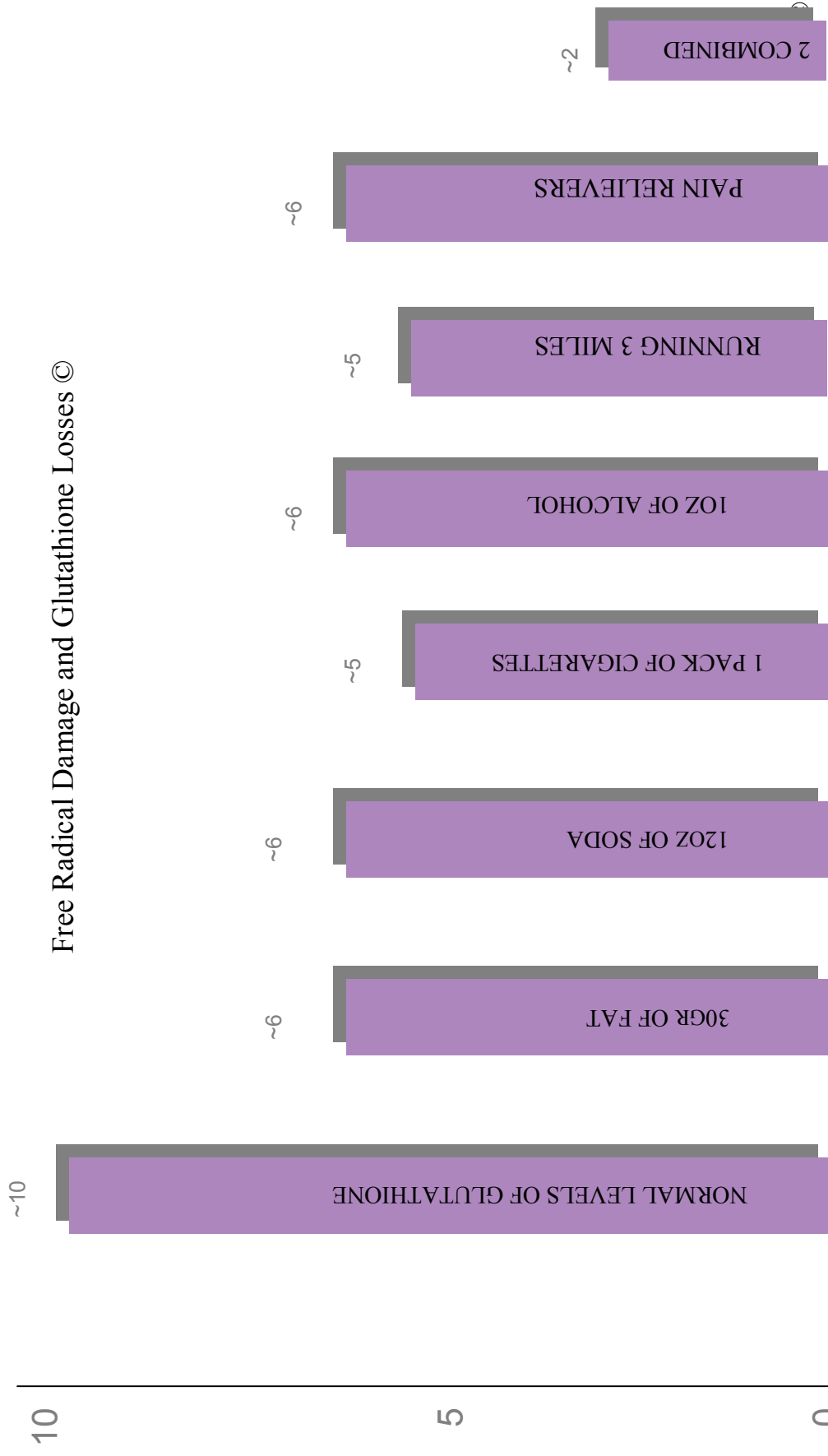
- Nature's Glutathione ("GSH") appeared on the scene several hundred million years ago and made life and nature possible as we know it today. It controls many life processes in most cells. It is a powerful regulatory antioxidant and routinely turns genes and proteins "on" and "off".
- Glutathione consists of three unusually attached amino acids: glutamate, cysteine and glycine.
 - The middle one carries the "yellow" sulfur atom. The flanking amino acids are glutamate and glycine.
 - Glutamate is attached backwards by a "gamma" link, which leaves its unattached end highly electrically charged... it makes GSH difficult to absorb and precludes easy distribution into cells.
 - Glutamate and glycine shelter the sulfur, to precisely control its reactivities. Otherwise, the sulfur is oxidized and is removed (desulfuration) making the molecule not only useless but dangerous.
 - **Obviously, the Health Care Professionals and the consumers must determine if: (i) the glutathione they are planning to use has been stabilized, (ii) has had its charge neutralized, and (iii) has proven safety studies along with absorption and intracellular distribution. Quite simply, demand the information in writing from the purveyors.**
- Cells expend a great deal of energy to make the protein enzymes that put glutathione together in this complex way. Every living thing on Earth that uses GSH makes it in the same way and relies on it as a central cell regulator, and neutralizer of Reactive Oxygen, Nitrogen, and Quinoid Species.

IMPORTANT MEDICAL FUNCTIONS OF THE BODY'S OWN GLUTATHIONE ©

- The body's own GSH does the following:
 1. prevents the activation of transcription factors, such as the NFkappaB's, that switch on 144 disease-linked genes, (*growth factors; NADPH oxidase via ras; COX-2; Chemokines; matrix metalloproteinases; VEGF; and others*);
 2. dismantles toxic fat molecules that have become peroxidized; prevents radical chain reactions;
 3. destroys the free radical generator, hydrogen peroxide (H₂O₂), routinely formed in mitochondria; without sufficient GSH the mitochondria start apoptotic cell death by leaking toxic substances into the cell;
 4. is critical for defender scavenger cells (phagocytic cells) that clear away debris in all tissues; high GSH levels in the scavenger cells enhance local defenses;
 5. controls arachidonic acid metabolism and the products of the cyclo-oxygenases and lipoxygenases through its ability to neutralize free radicals; central in minimizing inflammation;
 6. maintains the production of two biological molecules (PGI₂ and nitric oxide) that are needed to keep blood vessels relaxed, open, and smooth, for efficient blood flow;
 7. upregulates (enhances) T helper 1 immunologic response patterns needed for eradicating infections and malignancies;
 8. turns regulatory proteins and genes "on" or "off" by setting the redox potential in concert with redox proteins.

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Free Radical Damage and Glutathione Losses ©



What causes Free Radical Damage?

Sugar • Fat • Tobacco • Excessive Alcohol • Excessive Sunlight • Acetaminophen • Vigorous Exercise • Diabetes • Obesity • Viral STDs

The decreases shown are estimates derived from scientific studies. They represent averages. Not everyone will respond in the same way all the time to these factors. It's a good idea to ensure that there is a safe, reliable source of Glutathione available for your use.