Superoxide Dismutase

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Learning Objectives

-What Superoxide Dismutase is & where it is found.

-Why Superoxide Dismutase is important to human body.

-Current research in the field of Redox therapy

-Increasing SOD levels in the body to reduce cellular damage

-Clinical Application of Superoxide Dismutase

Historical Background

Discovered by Joe McCord

-Graduate Student working Under

Dr. Irwin Fridovich

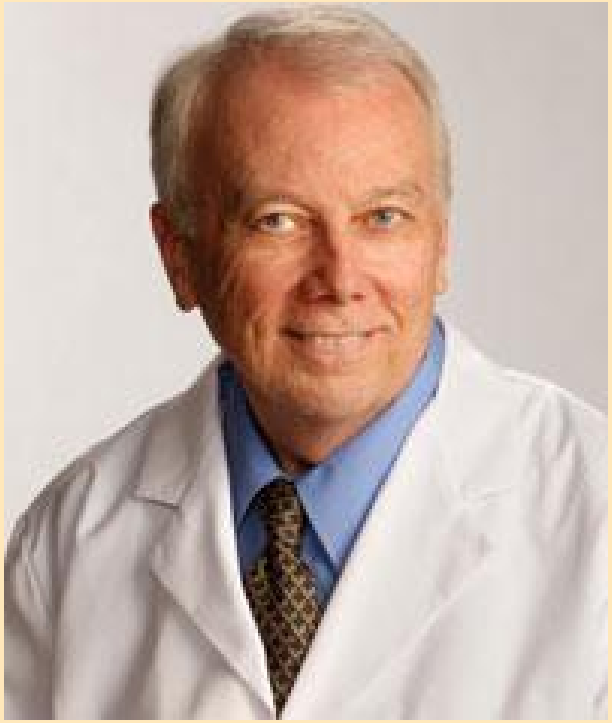
-SOD first a theory...

3 Key Findings of S.O.D in:

Aerobic Life

Inflammation

Ischemia Reperfusion (McCord, 1968)



What is Superoxide Dismutase? (SOD)

Found in all living cells

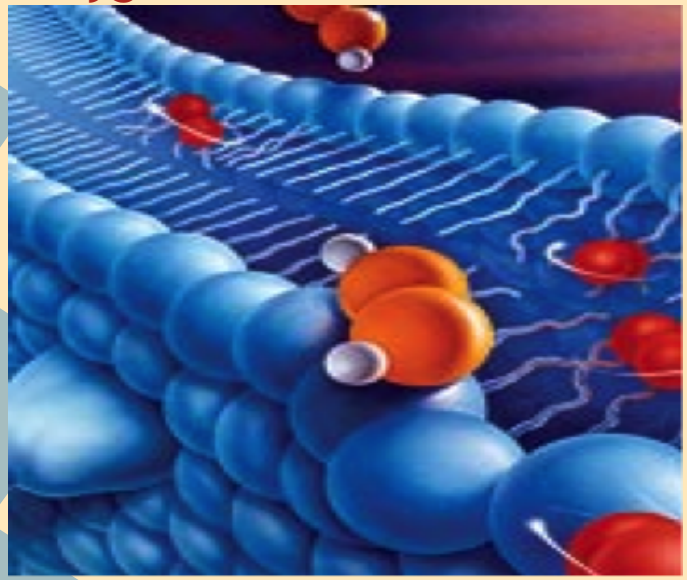
An antioxidant that Protects oxygen-metabolizing cells against harmful effects of free radicals

Our own cells have 3 types of SOD

(Cu,Zn) Mn, and Iron

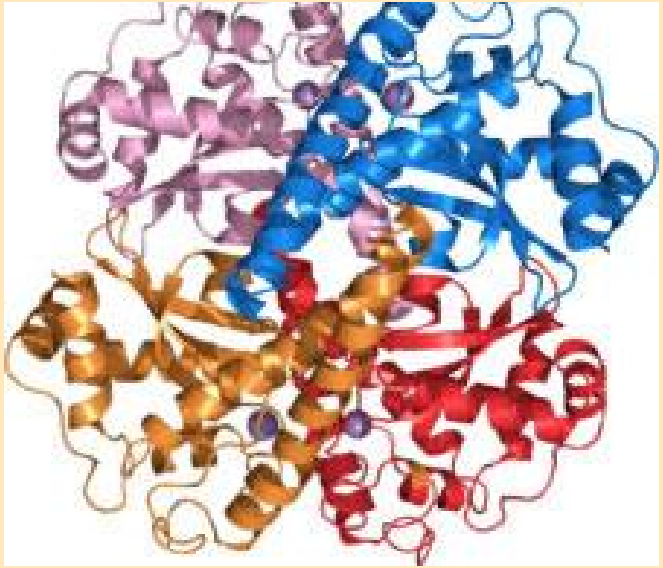
Cell Damage and SOD Enzyme

Oxygen Free Radicals



http://www.lef.org/magazine/2006/6/report_sod/Page-01

Superoxide Dismutase Enzyme



http://www.lifevantage.com/science/

Review of the Literature

Superoxide Dismutase (SOD) is consider the body's primary antioxidant defense (Klapcinska, 2000)

When SOD is ingested in the body, it is quickly destroyed by stomach acids and intestinal enzymes (Muth, 2004)

It is possible to boost levels of this important antioxidant by consuming supplements that supply concentrated amounts of appropriate precursor molecules (Nelson, 2006)

Evidence suggest that boosting SOD levels may guard against disease and extend life span (Sampayo, 2003)

Advances in the Field

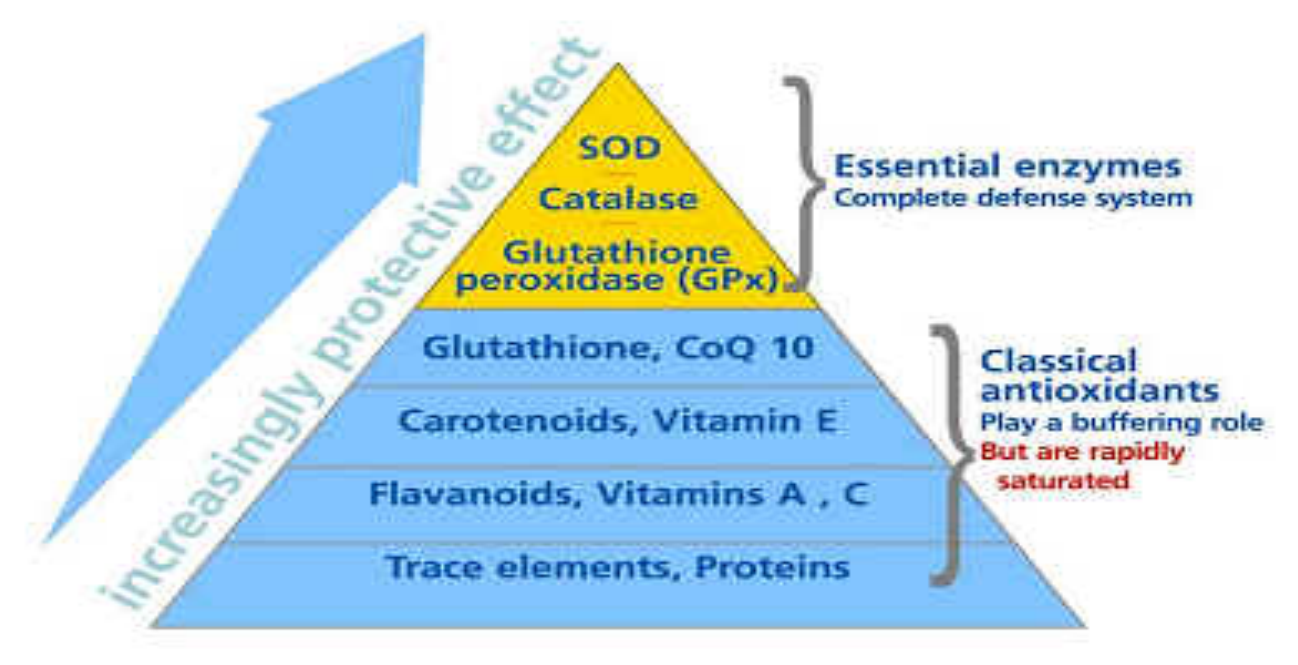
Formulating Bioavailable SOD

-Cantaloupe Melon

-Wheat enzyme; Gliadin

Synergetic Supplementation

-Protandim(Ashwaganda, Bacopa, Green Tea, Milk Thistle, Tumeric)



http://www.superglisodin.com/

Significance

Possibly Effective by Injection

-Osteoarthritis and Rheumatoid arthritis

-Lung Problem in newborn infants

-Kidney Condition

Likely ineffective by Injection

-Reducing heart damage after a heart attack

Insufficient Evidence by Injection

-Sports injuries

-Gout

-Cancer

-Preventing Rejection of Kidney Transplants

-Other Conditions

Who discovered SOD?

A. Irwin Fridovich
B. Joe McCord
C. Arne Holmgren
D. Wulf Droge

What is Superoxide Dismutase?

A. A dangerous free radical
B. An essential vitamin
C. The body’s primary antioxidant defense
D. A bioengineered supplement

How can SOD levels be increased in the body?

A. Cantaloupe Melon Enzyme
B. Wheat Enzyme, Gliadin
C. Synergetic Supplementation, Protandim
D. All the Above

Work Cited

Klapcinska B, Derejczyk J, Wieczorowska-Tobis K, et al. Antioxidant defense in centenarians (a preliminary study). Acta Biochim Pol. 2000; 47(2):281-92.)

Muth CM, Glenz Y, Klaus M, et al. Influence of an orally effective SOD on hyperbaric oxygen-related cell damage. Free Radic Res. 2004 Sep; 38(9):927-32.)

Nelson SK1, Bose SK, Grunwald GK, Myhill P, McCord JM.The induction of human superoxide dismutase and catalase in vivo: a fundamentally new approach to antioxidant therapy.Free Radic Biol Med. 2006 Jan 15;40(2):341-7.

Regnault C, Soursac M, Roch-Arveiller M, Postaire E, Hazebroucq G. Pharmacokinetics of superoxide dismutase in rats after oral administration. Biopharm Drug Dispos. 1996 Mar;17(2):165-74.

McCord JM. and Fridovich I. The reduction of cytochrome c by milk xanthine oxidase. J Biol Chem 243: 5753–5760, 1968.

Sampayo JN, Gill MS, Lithgow GJ. Oxidative stress and aging—the use of superoxide dismutase/catalase mimetics to extend lifespan. Biochem Soc Trans. 2003 Dec;31(Pt 6):1305-7.

Answer

Question # 1- B. Joe McCord

Question # 2- C. The body's primary antioxidant defence

Question # 3- D. All the above