TECHNICAL OVERVIEW

GliSODin BioActive – unique source of *nutrigenomic* Superoxide dismutase (SOD)

1. GliSODin is a double-patented *Cucumis melo* melon extract combined with small amounts of gliadin biopolymer.
2. GliSODin’s *nutrigenomic* ability to up-regulate the endogenous synthesis of SOD is supported by human clinical trials, a clinically-relevant effect which is not demonstrated by any other melon-derived SOD product.
3. GliSODin’s two international patents ensure that *other SOD products cannot claim equivalence*.
4. Studies in both animals and humans demonstrate that only GliSODin (and not the melon ingredient itself) significantly upregulates the genes which code for the cell’s 3 Antioxidant Enzymes, SOD, Glutathione peroxidase (GPx) and Catalase.
5. A 2004 pharmacokinetic study showed that GliSODin increased liver SOD levels 400% after 30 days.
6. Where Endogenous SOD in erythrocytes can quench 4.2 million free radicals per minute, ascorbate quenches just one.

**Enhancing the cell’s internal defences** A growing body of evidence shows that enhancing the cell’s endogenous defences is a far more effective clinical strategy than administering compounds such as vitamin antioxidants and poorly-bioavailable polyphenolic plant extracts in the hope that they confer antioxidant benefit. SOD, GPx and Cat are the cell’s *primary endogenous defence* against oxidative stress. GliSODin provides a safe, effective and unique strategy for enhancing natural cellular defences which are known to decline during illness or with ageing.

**Clinical Application** Because oxidative stress underpins inflammatory, acute and chronic disease states, the ability to enhance the cellular defences provides an *effective core strategy* for dealing with elevated superoxide production. Most superoxide is not derived from the external environment but is generated within the cell, especially in the mitochondria. GliSODin as a core prescription can help restore cellular defences to optimal function.

**PRODUCT FORMULA**

**Presentation:** GliSODin is blister-packed to help protect the enzyme activity and boxed in packs of 60 vegetable capsules, suited to a 30-day supply at the usual dose of 1 capsule bd. Store at < 25°C.

**Each 250mg capsule contains as active ingredient:**

- **Cucumis melo juice powder** = 3.325mg
- **SOD activity** = 100 IU /mg
  
  *(Equivalent SOD activity/capsule) = 250 IU (validated minimum)*

GliSODin is guaranteed free of palm oil.

**Recommended Daily Dosage:**

One capsule twice daily, 12 hours apart, delivering **500 IU SOD activity**, equivalent to the effective GliSODin dosages used in clinical trials.

The level of maximum induction of the Antioxidant Enzymes is reached at 30 days.

Only products bearing IsoCell NUTRA’s GliSODin logo shown here contain the double-patented product used in published studies cited here as References #1, 5, 6, 7 & 10 and shown on Page 2.

**Why does GliSODin contain gliadin?** GliSODin’s *nutrigenomic* property is uniquely conferred by the presence of the gliadin biopolymer. The gliadin also protects the SOD from gastric degradation. Each 250mg capsule contains just 8.3mg of gliadin which is equivalent in gliadin to that in one small breadcrumb. As gliadin typically represents 20-50% of the gluten molecule, each capsule may contain an average equivalent of 25mg gluten. This is under the daily 50mg threshold at which coeliac effects are likely to be triggered, so that even gluten-intolerant patients may tolerate GliSODin.

**GliSODin – LISTED INDICATIONS**

- Contains the antioxidant Superoxide dismutase.
- Boosts circulating levels of oxidant defences *SOD, GPx and Cat*, reducing evidence of oxidative damage.
- Improves antioxidant defences and helps to reduce oxidative damage.
- May help improve and maintain cardiovascular health and the cardiovascular system.
- May help improve and maintain the health and flexibility of blood vessels.
- Protects blood vessels from oxidative damage and helps maintain healthy blood vessel structure.
- Aids, assists or helps in the maintenance or improvement of general well-being.

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MECHANISM OF ACTION

GliSODin vs Melon extract  GliSODin’s uniqueness lies in its nutrigenomic ability to upregulate the genes which code for the 3 Antioxidant Enzymes. Nutrigenomics explains how bioactive molecules such as GliSODin activate intracellular ‘switches’ which translocate to the nucleus where they stimulate gene expression; as a result, levels of the 3 Antioxidant Enzymes are increased.

The Vouldoukis research group confirmed that the same melon extract ingredient without gliadin shows no significant increase in SOD5. (See Table on left)

GliSODin compared with vitamin and phytochemical ‘Antioxidants’  Nutrigenomics has changed the way we view ‘antioxidants’ and the role of redox balance in human cells.

A Potent ‘MULTIPLIER’ Effect A single vitamin or polyphenol antioxidant molecule quenches just one reactive oxygen species (ROS – or free radical) but a single Antioxidant Enzyme such as SOD quenches literally billions of ROS per second3 and continues to do so for 3-4 days. Animal and human research4 has confirmed that GliSODin enhances cellular defences by significantly increasing levels of endogenous SOD, GPx and Cat Antioxidant enzyme levels. The Table above shows approx. 400% increase in SOD in liver cells. At the same time, the levels of inflammation markers5 significantly decrease.

Pharmacokinetic Studies5 & Dosage Considerations A single 250mg GliSODin capsule takes just 3 hours to nutrigenomically increase SOD levels by 150%. This level is maintained for a further 9 hours before declining. Ideally, dose at 1 capsule bd approx. 12 hours apart. Maximum SOD levels are achieved at around 30 days.

CLINICAL TRIAL EVIDENCE FOR GLISODIN

Research on GliSODin (including human clinical trials) is catalogued in an extensive database which can be viewed at www.glisodin.org. The 2004 trial by Muth10 showed that GliSODin completely protected deep-sea divers against the DNA-damaging effects of hyperbaric oxygen. A similar study design11 using vitamins C & E failed to prevent such damage. In 2007, Cloarec5 showed that over a 2-year period GliSODin was able to reduce the carotid intima medial thickening (CIMT) associated with atherosclerosis in pre-diabetics. It is generally accepted that statins at high doses may achieve this; that GliSODin was able to bring about regression of CIMT is remarkable for a nutraceutical compound.

Nutrients like vitamin C, E and beta-carotene play essential roles in human cells but are not particularly potent intracellular antioxidants. Polyphenols like quercetin and resveratrol show excellent nutrigenomic cellular defences via a nutrigenomic mechanism. They may also behave unpredictably as pro-oxidants8 and their poor bioavailability limits a potential intracellular antioxidant effect. Numerous clinical trials using classical antioxidants have failed9 and until recently8, it had not been clear that these compounds have been the ‘wrong men for the job’. Polyphenols may exert their antioxidant effects in the gut but not systemically9.

1 Menvielle-Bourg FJ  Superoxide Dismutase (SOD), a Powerful Antioxidant, is now Available Orally Phytotherapy, 2005;3: 118-121
2 Padmanavathi P et al.  Increased erythrocyte antioxidant status protects against smoking induced hemolysis in moderate smokers Human and Experimental Toxicology, 2011 Jan 24; ahead of print
3 Trachootham D et al  Redox regulation of Cell Survival Antiox & Redox Signalling 2008 Vol.10(8):1343-1374
7 Cloarec M et al  GliSODin, a Vegetal SOD with Gliadin as Preventative Agent vs. Atherosclerosis as Confirmed with Carotid Ultrasound-B imaging Eur Ann Allergy Clin Immunol. 2007;39(2): 45-50