OxisResearch™

Bioxytech® Assay Systems

Antioxidant Biomarkers
Superoxide Dismutase
Total Glutathione
Glutathione
Glutathione Peroxidase (Cellular)
Glutathione Peroxidase (Plasma)
Glutathione Reductase
GSH/GSSG Ratio
G6PD¦6PGD-340
GST-340

Nitric Oxide Biomarkers
Nitric Oxide (Enzymatic)
Nitric Oxide (Non-Enzymatic)
Nitric Oxide Synthase (Radioactive)
Nitric Oxide Synthase (Colorimetric)

Oxidative Biomarkers
MDA
Total Lipid Hydroperoxides
8-Isoprostane
Hydrogen Peroxide
8-Hydroxydeoxyguanosine
Aconitase

Inflammatory Biomarkers
Myeloperoxidase
Lactoferrin

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ANTIOXIDANT BIOMARKERS

GST-340 ASSAY SYSTEM

NEW!

OxisResearch™

Your Source for Oxidative Stress Products and Services

ANTIOXIDANT BIOMARKERS

GST-340 ASSAY SYSTEM

Catalog Number: 21046

Glutathione S-transferase (GST) utilizes glutathione (GSH) to scavenge electrophilic xenobiotics as part of an organism's defense mechanism against the mutagenic, carcinogenic and toxic effects of such compounds. GST activity is present throughout the phylogenetic scale, generally as a family of enzymes whose major classes differ in their xenobiotic specificity. Each major class contains multiple isozymes. All GST isozymes catalyze the same reaction, shown schematically below, where X is a xenobiotic.

$$X + GSH \xrightarrow{GST} G\text{-}S\text{-}X + H^+$$

GST activity is present in most human tissues but the expression of the different isozymes is organ specific. It is especially prevalent in the liver, which plays a major role in detoxification. Due to its activity in detoxifying xenobiotics, GST plays an important role in the well-being of all living systems. Because of the interaction of GST with glutathione, a major component of the antioxidant system, and because of the implications relative to removal of oxidatively generated harmful substances, *Oxis*Research™ has introduced the GST-340 assay for measurement of GST activity.

Because the various GST isozymes have widely varying K_m and V_{max} values towards different xenobiotics and GSH, the contribution of each to the overall GST activity will depend on the xenobiotic used as well as the reaction conditions. For this reason the substrate with the broadest range of isozyme detectability coupled with ease of monitoring was chosen for the GST-340 activity assay.

GST-340 METHOD

The Bioxytech GST-340™ assay is based on the GST-catalyzed reaction between 1-chloro-2,4-dinitrobenzene (CDNB) and GSH. Following addition of GST to the reaction vessel CDNB and GSH combine to form a dinitrophenyl thioether chromophore and a chloride ion (Figure 1).

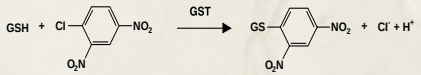

Figure 1. The reaction of CDNB with GSH.

One unit of GST activity is defined as the amount of enzyme producing 1 µmol of CDNB-GSH Conjugate/min under the conditions of the assay. Figure 2 shows how addition of GST results in the gradual increase of the chromophore. The non-enzymatic reaction of CDNB and GSH under assay conditions is slow relative to the enzyme-catalyzed reaction.

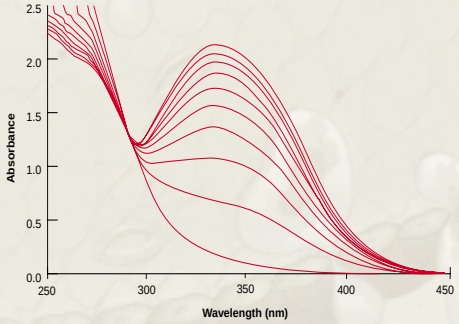

Figure 2. The reaction of CDNB and GSH in the presence of GST. The lowest scan at 340 nm is the CDNB/GSH mixture before addition of GST. Scans were taken at two minute intervals.

PRODUCT SUMMARY

Catalog Number: 21046

Intended Use:
Quantitative measurement of Glutathione S-tranferase enzyme activity.

Format:
100 test colorimetric

Kit Contents:
- Assay Buffer
- CDNB Substrate
- GSH
- Sample Buffer

Storage and Stability:
9 Months from date of manufacture when stored as specified.

Specimen Requirements:
Tissue, Cell or RBC lysate

Precision:

	Low	Med	High
mU/mL enzyme	1.42	4.20	8.20
Mean (ΔA_{340}/min)	0.0136	0.0403	0.0787
Intra Assay (%CV)	0.89	0.80	1.95
Total Assay (%CV)	1.05	0.89	2.13

Sensitivity:

LLD in reaction mixture	0.060mU/mL
LLD in sample	1.2mU/mL