

OxisResearch™

Bioxytech® Assay Systems

Cell Signaling Biomarkers

NFκB (Chemiluminescent & Colorimetric)

Antioxidant Biomarkers

Antioxidant Potential

Superoxide Dismutase

Total Glutathione

Glutathione

Glutathione Peroxidase (Cellular & Plasma)

Glutathione Reductase

GSH/GSSG Ratio

Catalase

Nitric Oxide Biomarkers

Nitrotyrosine

Nitric Oxide (Enzymatic/Cadmium)

Nitric Oxide Synthase (Radio. & Color.)

Nitric Oxide Synthase

Oxidative Biomarkers

8-epi-F2α Metabolite

MDA

Total Lipid Hydroperoxides

8-Isoprostane

Hydrogen Peroxide

8-Hydroxydeoxyguanosine

Aconitase

4-Hydroxyalkenals

Inflammatory Biomarkers

Myeloperoxidase

Lactoferrin

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ANTIOXIDANT BIOMARKERS

cGPx-340 ASSAY SYSTEM

OxisResearch™

Your Source for
Oxidative Stress
Products and Services

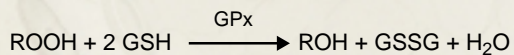
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ANTIOXIDANT BIOMARKERS

cGPx-340 ASSAY

Catalog Number: 21017

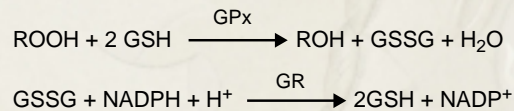
Cellular glutathione peroxidase (cGPx) is a member of a selenium containing family of GPx enzymes whose function is to detoxify peroxides in the cell. Since peroxides decompose to form highly reactive radicals, the GPx enzymes play a critical role in protecting the cell from free radical damage, particularly lipid peroxidation. The GPx enzymes catalyze the reduction of H₂O₂ to water and organic peroxides (ROOH) to the corresponding stable alcohols (ROH) using glutathione (GSH) as a source of reducing equivalents.



With few exceptions, GPx enzymes are comprised of 4 identical subunits. Each subunit contains a molecule of selenocysteine in the enzyme's active site. When associated with GSH, GPx selenocysteine is thought to participate directly in electron donation to the peroxide substrate and to become oxidized in the process. This oxidation of selenocysteine then strips electrons from 2 units of glutathione generating the disulfide GSSG form. Since cGPx activity depends on selenium the Bioxytech cGPx-340 assay is an ideal functional assay for detecting the effect of Se specific trace mineral deficiency.

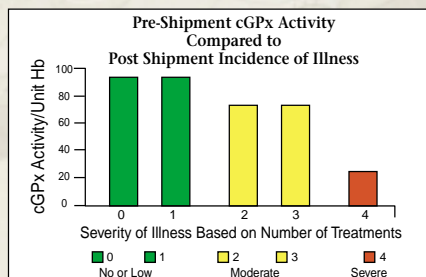
cGPx-340 Method

The Bioxytech cGPx-340 method is an indirect measure of cGPx. Oxidized glutathione (GSSG), produced upon the reduction of organic peroxides by cGPx, is recycled to its reduced state by the enzyme glutathione reductase (GR).



To assay for GPx activity, samples are added to a solution containing GSH, glutathione reductase (GR) and NADPH. An enzymatic reaction is initiated by addition of an *tert*-butyl hydroperoxide substrate. By monitoring the NADPH consumption, as noted by a decrease in absorption at 340nm, the Bioxytech cGPx-340 method allows for sensitive detection of cGPx activity.

The graph below illustrates the usefulness of the Bioxytech assay as a functional enzyme biomarker. In this example, blood samples were taken from auction yard feeder calves and assayed for cGPx activity using the Bioxytech cGPx-340 test. After shipment to the feedyard, calves were monitored for signs and treatment of bovine respiratory disease complex (BRD). The figure below shows correlation between pre-shipment cGPx values and predisposition for BRD based on symptoms and incidence of treatment.



PRODUCT SUMMARY

Catalog Number: 21017

Intended Use:

Quantitative measurement of cellular glutathione peroxidase activity

Format:

100 Test Colorimetric

Kit Contents:

- NADPH Reagent
Contains NADPH, GSH and GR
- Assay Buffer
- *tert*-Butyl Hydroperoxide

Storage and Stability:

21 Months from date of manufacture when stored as specified.

Specimen Requirements:

Cell and tissue lysates

Assay Precision:

	Low	Med	High
Inter-assay (%CV)	4.0	4.1	4.9

Sensitivity:

6 mU/mL (*final assay concentration*)