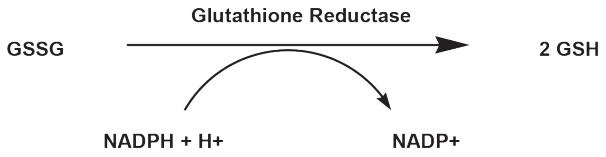
DetectX® Glutathione Reductase (GR) Activity Kit

OXIDATIVE STRESS

STRESS



- Glutathione reductase (GR) plays an indirect but essential role in the prevention of oxidative damage within the cell by helping to maintain appropriate levels of intracellular glutathione (GSH).
- GSH, in conjuction with the enzyme glutathione peroxidase (GP), is the acting reductant responsible for minimizing harmful hydrogen peroxide cellular levels. The regeneration of GSH is catalyzed by GR.
- GR is a ubiquitous 100-120 kDa dimeric flavoprotein that catalyzes the reduction of oxidized glutathione (GSSG) to reduced glutathione, using β-nicotinamide dinucleotide phosphate (NADPH) as the hydrogen donor.
- Molecules such as NADPH act as hydride donors in a variety of enzymatic processes. NADPH has been suggested to also act as an indirectly operating antioxidant, given its role in the re-reduction of GSSG to GSH and thus maintaining the antioxidative power of glutathione.

DetectX® GLUTATHIONE REDUCTASE (GR) FLUORESCENT ACTIVITY KIT (K009-F1)

MOST SENSITIVE

MULTI SPECIES

Our DetectX® Glutathione Reductase (GR) Fluorescent Activity Kit determines GR activity by the amount of GSH generated from the reduction of GSSG with a non-fluorescent molecule, ThioStar®, that covalently binds the free thiol group on GSH to yield a highly fluorescent product. The most widely used procedure to measure GR is to monitor the oxidation of NADPH as a decrease in absorbance at 340nm. However many biological molecules absorb light at 340 nm, plus the detection system gives very low OD readings. The DetectX® Glutathione Reductase Fluorescent Activity kit overcomes these problems measuring GR activity by the direct detection of the GSH formed from oxidized glutathione.

- **Measure** GR in **20 minutes** or kinetically
- **Sample types:** lysates, RBCs, serum, plasma,
- **Measure** up to **41 in duplicate**
- **Sensitivity:** 9 µU/mL
- **4°C** stable reagents

RELATED DetectX® KITS

- Catalase Colorimetric Activity Kit **(K033-H1)**
- Catalase Fluorescent Activity Kit **(K033-F1)**
- FRAP™ (Ferric Reducing Antioxidant Power) Detection Kit **(K043-H1)**
- Glutathione Colorimetric Detection Kits **(K006-H1/H1C-L/H1C-H)**
- Glutathione Fluorescent Detection Kits **(K006-F1/F5/F1D)**
- Glutathione S-Transferase (GST) Fluorescent Activity Kit **(K008-F1)**
- Hydrogen Peroxide (H_2O_2) Colorimetric Detection Kit **(K034-H1)**
- Hydrogen Peroxide (H_2O_2) Fluorescent Detection Kit **(K034-F1)**
- TBARS/MDA Universal Colorimetric Detection Kit **(K077-H1)**
- Superoxide Dismutase (SOD) Activity Kit **(K028-H1)**

Intra Assay Precision

Five native samples were diluted in Assay Buffer and run in replicates of 16 in an assay. The mean and precision of the calculated GR activities were:

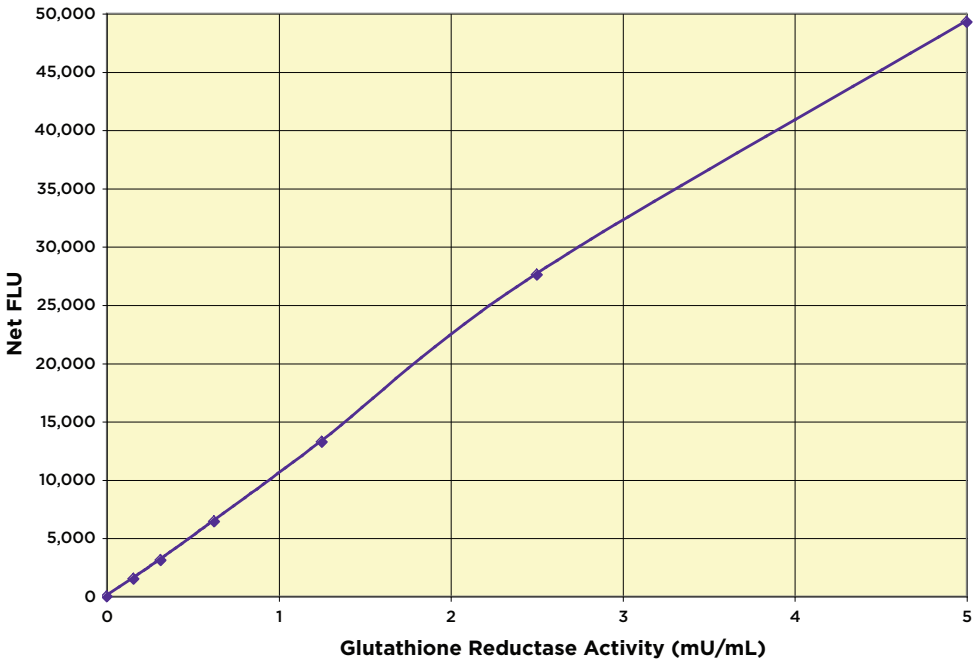
Sample	Glutathione Reductase Activity (mU/mL)	%CV
1	3.35	2.7
2	2.38	5.6
3	1.75	3.9
4	0.56	3.7
5	0.27	3.6

Inter Assay Precision

Five native samples were diluted in Assay Buffer and run in duplicates in twenty-two assays run over multiple days by four operators. The mean and precision of the calculated GR activities were:

Sample	Glutathione Reductase Activity (mU/mL)	%CV
1	3.35	5.0
2	2.36	12.6
3	1.64	6.8
4	0.62	10.6
5	0.27	10.5

Typical Standard Curve



Run your own standard curve for calculation of results. Do not use this data.