

## Total Glutathione in Whole Blood

<b>Specimen Type</b>	Whole Blood
<b>Specimen Volume</b>	10 mL Solution A: 8.5mL draw; Solution B: 6mL draw
<b>Collection</b>	Yellow top tubes (ACD, Solution A or B) Do not centrifuge. Send whole tube.  ACD blood collection tubes with solution A or B.  Solution A specimen volume is 8.5 mL. Solution B specimen volume is 6 mL.  ACD collection tubes must be > 50% filled in order to ensure proper mixture of ACD solution.
<b>Minimum Volume</b>	1 mL (From a fully drawn ACD solution A or B tube)
<b>Handling</b>	Ship refrigerated on ice packs. Do not place specimens directly on ice packs.
<b>Rejection Criteria</b>	Specimens received frozen. Specimens must be received refrigerated. Hemolyzed specimens. Specimens outside of listed stability. Samples oversaturated with ACD solution. Collections submitted in unvalidated tubes. Samples submitted without two unique identifiers and date of collection.
<b>Stability</b>	Refrigerated for 21 days.  Extracted samples may be stored at -80°C for up to three weeks.
<b>Methodology</b>	Kinetic
<b>Reference Range</b>	373-838 $\mu$ M
<b>Turnaround Time</b>	Up to 3 business days.
<b>CPT Code</b>	82978
<b>Clinical Significance</b>	Glutathione is a tripeptide formed by a peptide linkage between the amine group of cysteine linked to glycine and the carboxyl group of the glutamate side-chain. It is an abundant cellular reducing agent, whose major biological function is mitigating oxidative damage to biological macromolecules. Glutathione is also important in the metabolism and excretion of xenobiotic compounds. Glutathione is consumed to maintain cells in a reduced condition. Consequently, glutathione levels in patient samples are expected to be diminished in disease states where oxygen reactive species are involved, such as rheumatoid arthritis and atherosclerosis. Low glutathione levels have been linked to reduced dopamine production in neurons, which suggests a relationship to dopamine based neurological disorders such as Parkinson's disease. High levels of glutathione have been linked to chemotherapy resistance in cancer treatments.

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<b>Principle</b>	The assay uses an enzymatic recycling system for the quantitation of glutathione in human whole blood. Glutathione reductase reduces oxidized glutathione to two molecules of the reactive species, reduced glutathione. Reduced glutathione reacts with DTNB, generating a colored complex whose absorbance is measured at 405 nm. The absorbance is directly proportional to the glutathione concentration and glutathione levels are measured using a standard curve.
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