

# Glucose-6-Phosphate Dehydrogenase (G-6-PD), Quantitative

**CPT Code:** 82955

**Order Code:** 500

**Alternative Names:** G-6-PD, G-6PDH, G6PD, Glucose-6-PD (RBC)

**ABN Requirement:** No

**Specimen:** Whole Blood

**Volume:** 1.0 mL

**Minimum Volume:** 0.5 mL

**Container:** EDTA (Lavender Top) Tube

## **Collection:**

1. Collect and label sample according to standard protocols.
2. Gently invert tube 8-10 times immediately after draw. Do not shake.
3. Do not centrifuge.

**Please Note:** Will determine hemoglobin level.

**Transport:** Store EDTA whole blood at 2°C to 8°C after collection and ship the same day per packaging instructions included with the provided shipping box.

## **Stability:**

**Ambient (15-25°C):** 48 hours

**Refrigerated (2-8°C):** 7 days

**Frozen (-20°C):** Not Acceptable

**Causes for Rejection:** Specimens other than EDTA whole blood; improper labeling; samples not stored properly; samples older than stability limits; sample received frozen

**Methodology:** Kinetic

**Turn Around Time:** 3 to 5 days

**Reference Range:** 7.0-20.5 U/g Hgb

**Clinical Significance:** Glucose-6-phosphate dehydrogenase (G6PD) deficiency is the most common enzyme deficiency in the world, affecting an estimated 400 million people worldwide [1]. It is more common in people of African, Mediterranean, and Asian descent. G6PD deficiency is an X-linked genetic disorder and, in general, affects males more than females. Severity ranges from mild to severe subtypes. Newborns with G6PD deficiency may have prolonged and more pronounced neonatal jaundice than other newborns. Adults with G6PD deficiency may have episodes of acute hemolytic anemia, and symptoms may include jaundice, fatigue, splenomegaly, and dark urine. Episodes may be induced by illness (infections), certain foods (fava beans), and particular medications (for example some sulfonamides and antimalarial drugs)[2]; therefore, some precautions may be recommended to avoid offending triggers.

Quantitative Glucose-6-Phosphate Dehydrogenase is an assay that measures the G6PD enzyme level. A low value may indicate G6PD deficiency (as opposed to values either within or above the reference range). [Perkins[3]] has found that some females with G-6-PD deficiency have difficulty in carrying a pregnancy to term. Erythrocytic G-6-PD appears to be sensitive to the endocrine changes associated with pregnancy. [Vergnes and Clerc [4]] found that 65% of their patients showed a significant fall in the G-6-PD activity in the later months of pregnancy with return to normal after delivery. Of note, as reticulocytes have higher G6PD activity than mature erythrocytes, if the blood sample is collected just after an acute hemolytic episode, G6PD activity levels can be falsely normal [5]. Therefore, if G6PD deficiency is suspected, consider repeating the test. Molecular genetic testing may also be indicated in cases where the disorder is suspected, or where there is a family history of G6PD deficiency, as enzyme activity may be normal in heterozygous females.

## **References:**

1. <https://www.who.int/malaria/mpac/mpac-october2019-session7-updating-G6PD-classification.pdf>
2. Luzzatto L, Nannelli C, Notaro R. Glucose-6-Phosphate Dehydrogenase Deficiency. *Hematol Oncol Clin North Am.* 2016 Apr;30(2):373-93.
3. Perkins, R. The significance of glucose-6-phosphate dehydrogenase deficiency in pregnancy. *Amer. J Obstetr. And Gynec.* 1976.

May;125(2):215-223.

4. Vergnes, H and Clerc, A. Erythrocyte Enzyme Activity in Pregnancy. Lancet 1968 Oct;292(7572):834.

5. Frank J. Diagnosis and Management of G6PD Deficiency. Am Fam Physician. 2005 Oct;72(7):1277-82.

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