Newborn screening of G6PD deficiency

Fluorometric determination of glucose-6-phosphate dehydrogenase activity from blood specimens dried on filter paper

- Fully quantitative
- Excellent reproducibility
- Simple and easy to perform
- Fluorometric measurement ensures maximum sensitivity
- Easily adaptable to existing screening systems
Neonatal G6PD

**PRINCIPLE OF THE TEST**

Glucose-6-Phosphate Dehydrogenase (G6PD) deficiency is the most common human enzyme deficiency; an estimated 400 million people worldwide are affected by this enzymopathy. Most of the affected individuals reside in Africa, the Middle East, and Southeast Asia. G6PD deficiency is also sometimes referred to as favism since fava beans cause hemolytic anemia to G6PD deficient individuals.

The G6PD enzyme catalyzes an oxidation/reduction reaction. The enzyme catalyzes the oxidation of glucose-6-phosphate to 6-phosphogluconolactone, while concomitantly reducing NADP+ to NADPH:

\[
\text{Glucose-6-phosphate + NADP}^+ \rightarrow 6\text{-phosphogluconolactone + NADPH + H}^+
\]

Normally, through NADPH production, G6PD neutralizes oxidizing agents and protects cells from oxidizing stress. Since there are no other NADPH-producing enzymes in red blood cells, they are very vulnerable to oxidizing agents. Certain oxidative drugs, fava beans, or infections can cause stress to the red cells of G6PD deficient individuals and consequently hemolysis ensues. In addition to hemolytic anemia, G6PD deficient individuals can expect several other clinical manifestations of their condition. These include neonatal jaundice, abdominal and/or back pain, dizziness, headache, dyspnea (irregular breathing), and palpitations.

**Quantitative assay from Labsystems Diagnostics**

The traditional Fluorescence-spot method is not only qualitative but also laborious, and reading of the results is highly subjective. Labsystems Diagnostics’ Neonatal G6PD assay is one step forward in G6PD screening by addressing these shortcomings. The assay is fully quantitative with 6 dried blood calibrators and 2 controls. Assay time is only 30 minutes and objective results are obtained from Fluoroskan/Ascent software with a click of a mouse. The assay is fully compatible with existing Labsystems Diagnostics’ neonatal screening system and assays, no additional investment is needed.

![Typical calibration curve using cubic spline curve fitting by Ascent software.](https://www.facebook.com/pages/Labsystems-Diagnostics-Oy/170758696402834)

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<th>Cat.no.</th>
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<th>Packing size</th>
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*Please note: Product specifications are subject to change without prior notice owing to product modifications, improvements/up-gradation.*