LABSYSTEMS
DIAGNOSTICS
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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

CE

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.

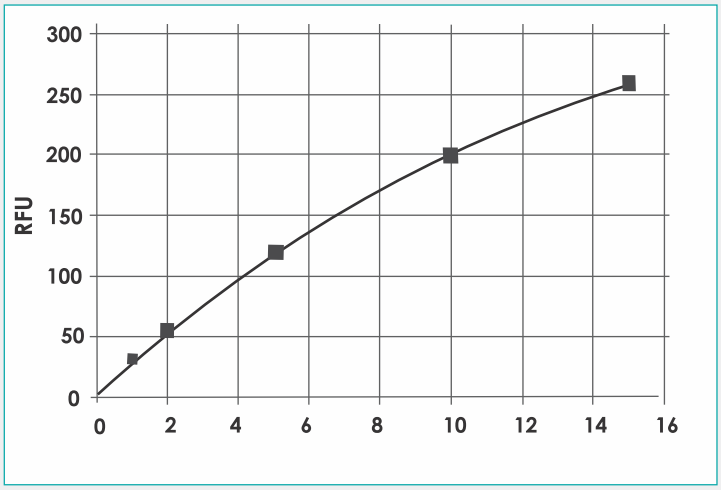
The G6PD enzyme catalyzes an oxidation/ reduction reaction. The enzyme catalyzes the oxidation of glucose-6-phosphate to 6-phosphogluconolactone, while concomitantly reducing NADP+ to NADPH:

$$\text{Glucose -6-phospate + NADP+} \xrightarrow{\text{G-6-PD}} \text{6-phosphogluconolactone + NADPH + H+}$$

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 backpain, 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 click of a mouse.
The assay is fully compatible with existing Labsystems Diagnostics' neonatal screening system and assays, no additional investment is needed.



G6PD Concentrations (IU/gHb)

Typical calibration curve using cubic spline curve fitting by Ascent software.

Assay Procedure

1. Punch single 3.2 mm sample disc into the microplate well (calibrators and controls in duplicates)
2. Reconstitute the reaction mix with buffer
3. Add reconstituted reaction mix 150ul/well
4. Incubate 30 min at RT, shaking
5. Add 150ul cold copper reagent
6. Measure fluorescence at ex.355 nm em 460 nm.

Cat.no.	Product name	Plate type	Packing size	Regulatory status
6199860	Neonatal G6PD	96 well solid	960 wells	CE marked

Type 903 filter paper is used in all products.

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