

Neonatal Glucose-6-phosphate dehydrogenase



Fava bean, the most common cause of hemolytic anemia in G6PD deficient individuals

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

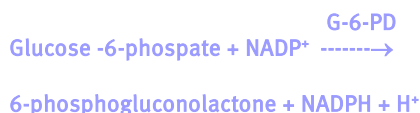
- fully quantitative
- excellent reproducibility
- simple and easy to perform
- fluorometric measurement ensures maximum sensitivity
- easily adaptable to existing screening systems

Easy and quantitative measurement of G6PD deficiency

Introduction

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:



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.

A new assay from Ani Labsystems

The traditional Fluorescence-spot method is not only qualitative but also laborious, and reading of the results is highly subjective.

Ani Labsystems' 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 Ani Labsystems' neonatal screening system and assays, no additional investment is needed.

Assay procedure

Punch single 3mm sample disc into the microplate well (calibrators and controls in duplicates)

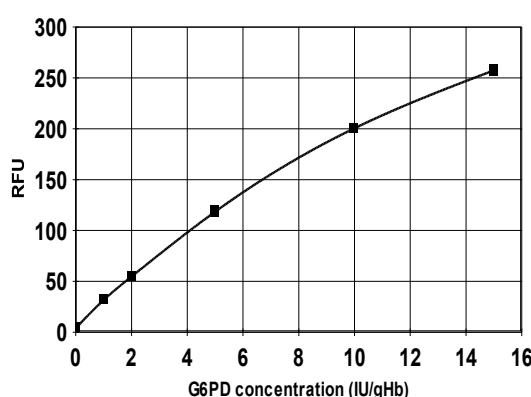
Reconstitute the reaction mix with buffer

Add reconstituted reaction mix 150ul/well

Incubate 30min at RT, shaking

Add 150ul cold copper reagent

Measure fluorescence at ex. 355nm / em. 460nm



Typical calibration curve using cubic spline curve fitting by Ascent software

Ordering Information, kits

6199860	Neonatal Glucose-6-phosphate dehydrogenase	10 x 96 = 960 wells
6199 896	Neonatal Phenylalanine	10 x 96 = 960 wells
6199 897	Neonatal Phenylalanine	50 x 96 = 4800 wells
6199 880	Neonatal hTSH FEIA Plus	10 x 96 = 960 wells
6199 881	Neonatal hTSH FEIA Plus	50 x 96 = 4800 wells
6199 892	Neonatal hTSH EIA	10 x 96 = 960 wells
6199 8923	Neonatal hTSH EIA	50 x 96 = 4800 wells
6199 802	Neonatal Toxoplasma gondii IgM FEIA	5 x 96 = 480 wells
6190 930	Neonatal Phenylalanine Controls	5 sets of 3 levels
6190 940	Neonatal Phenylalanine Calibrators	5 sets of 5 levels

Schleicher & Schuell 903 filter paper is used in all products