



G6PD Deficiency Test

The Astoria-Pacific SPOTCHECK[®] G6PD test is used as an aid in screening for glucose-6-phosphate dehydrogenase deficiency in newborns. Early detection of this enzyme deficiency can aid in the diagnosis and treatment of congenital nonspherocytic hemolytic anemia or drug induced hemolytic anemia associated with a G6PD deficiency.

Glucose-6-phosphate dehydrogenase is the initial enzyme in the hexose monophosphate pathway of glucose metabolism. In the SPOTCHECK[®] method, enzyme activity is measured by observing the fluorescence produced after NADP⁺ is reduced to NADPH when glucose-6-phosphate is present as a substrate. As G6PD catalyzes the oxidation of glucose-6-phosphate to 6-phosphogluconate, NADP⁺ is reduced to NADPH, which is measured by a fluorometer. The amount of NADPH produced is proportional to the G6PD enzyme activity in the sample. Maleimide, an inhibitor of 6-phosphogluconate dehydrogenase activity, is added to prevent the conversion of 6-phosphogluconate to ribulose-5-phosphate and additional production of NADPH.

Whole blood, spotted on standardized filter paper, S&S[®] 903[™] or equivalent is suitable for analysis. The procedure is designed for use with one 1/8 inch spot but may be adapted to alternative punch protocols with appropriate validation. Plasma or serum may also be analyzed.

Other tests, such as Phenylalanine or Total Galactose, can be run with the G6PD analysis simultaneously from the same extracted sample. The cartridge includes an on-line incubator to enhance enzymatic activity, and a dialyzer to filter out interferences. Sample throughput is 90 per hour or 4-5 microtiter trays per day.

The SPOTCHECK[®] G6PD 50 Hour Reagent Kit is designed to be used on the Astoria-Pacific SPOTCHECK[®] Analyzer. The kit will provide approximately 50 hours of analyzer run time. Allowing for start-up and calibrants, the approximate number of actual samples analyzed per kit is conservatively 2500.