

# BLOOD SPOT TEST SPECIFICATIONS

## Triglycerides

### Clinical Information

Triglycerides enter the circulation as the end-product of digesting dietary fat, and they are also synthesized by the liver. They are an important energy source for the body and are stored in fat cells. Elevated blood levels, or hypertriglyceridemia, often found in untreated diabetes and obesity, are an established indicator of atherogenic dyslipidemia. The National Cholesterol Education Program defines fasting triglyceride levels of 150 mg/dL or above as one of the diagnostic criteria for metabolic syndrome, although some studies have shown that fasting levels lower than 100 mg/dL should be considered as a more optimal cutoff in coronary heart disease risk assessment.

The inflammatory state leading to the development of atherosclerosis may be triggered by "postprandial dysmetabolism," a condition characterized by unusually high levels of glucose and triglycerides after a meal. Postprandial hypertriglyceridemia indicates the presence of remnant lipoproteins, which are believed to promote atherosclerosis, and it is also linked with insulin resistance and obesity. Several studies have found that triglyceride levels measured 2-4 hours after a meal are highly predictive of cardiovascular events, especially in women. Nonfasting levels >200 mg/dL are suggestive of postprandial dysmetabolism.

### References:

- Kapur S, Kapur S, Zava D. Cardiometabolic risk factors assessed by a finger stick dried blood spot method. *J Diabetes Sci Technol* 2008; 2:236-241.
- Ahmad I, Zhan M, Miller M. High prevalence of C-reactive protein elevation with normal triglycerides (100-149 mg/dL): are triglyceride levels below 100 mg/dL more optimal in coronary heart disease risk assessment? *Am J Med Sci* 2005;329:173-7.
- O'Keefe JH, Bell DS. Postprandial hyperglycemia/hyperlipidemia (postprandial dysmetabolism) is a cardiovascular risk factor. *Am J Cardiol* 2007;100:899-904.
- Nordestgaard BG, Benn M, Schnohr P, Tybjaerg-Hansen A. Nonfasting triglycerides and risk of myocardial infarction, ischemic heart disease, and death in men and women. *JAMA* 2007;298:299-308.

### Assay Method: Enzymatic

#### Intra-assay Precision

Intra-assay precision was determined by choosing three samples spanning the reference range, and analyzing them multiple times within the same run. Results are shown below:

Mean Triglyceride Concentration (mg/dL)	Standard Deviation	Coefficient of Variation (C.V. %)
37	2.38	6.4
154	6.65	4.3
449	16.26	3.6

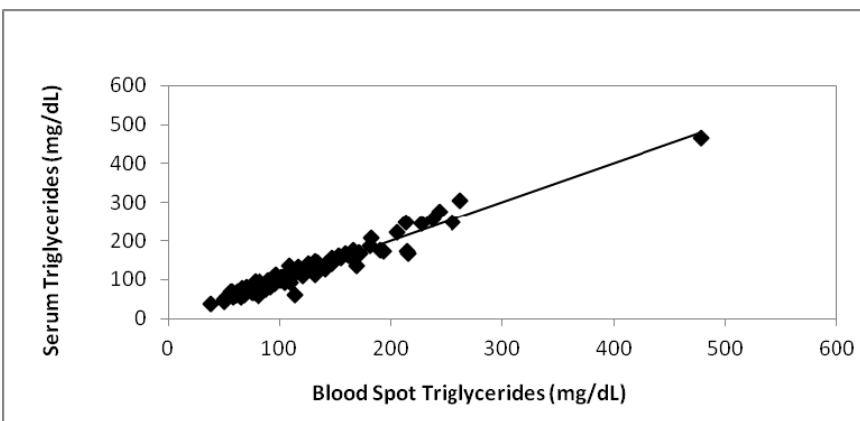
#### Inter-assay Precision

Inter-assay precision was determined by choosing three samples spanning the reference range, and analyzing them multiple times throughout different runs. Results are shown below:

Mean Triglyceride Concentration (mg/dL)	Standard Deviation	Coefficient of Variation (C.V. %)
53	3.77	7.1
163	10.24	6.3
362	25.35	7.0

### Accuracy

To test the accuracy of the dried blood spot assay for triglycerides, dried blood spot samples collected at the same time as corresponding serum samples were analyzed by linear regression. Resulting correlation data are shown below ( $R = 0.97$ ):



### Analyte Stability

The dried blood spot samples are stable for more than 1 month at room temperature.

### Specimen Collection

Kits for blood spot collection contain a filter paper collection card, finger lancets, an alcohol prep pad, sterile gauze, a band-aid, easy-to-follow instructions, and a mailer to return the sample for analysis.