

TEST: HEMOGLOBIN A_{1C}

PRINCIPLE:

Hemoglobin A_{1C} is a laboratory test used to diagnose patients with diabetes mellitus. Diabetes mellitus is a condition characterized by hyperglycemia resulting from the body's inability to use blood glucose for energy. In type 1 diabetes, the pancreas does not produce and secrete insulin and therefore, blood glucose cannot enter the cells. In type 2 diabetes, either the pancreas does not make enough insulin or the cells are unable to use insulin correctly. The complications of diabetes, involving the eyes, kidneys, nerves, and the blood vessels of the heart, brain and extremities, are common to both forms of the disease. The level of HbA_{1C} is proportional to both the average glucose concentration and the life span of the red blood cell in the circulation. The measurement of HbA_{1C} has therefore been accepted for the clinical management of diabetes through routine monitoring. Hemoglobin A_{1C} will be detected using the Bio-Rad D-10, which is a fully automated analyzer consisting of a single module that provides an integrated method for sample preparation, separation, and determination of the relative percent of specific hemoglobins (e.g., A₂, F, A_{1C}) in whole blood.

SPECIMEN REQUIREMENTS:

The whole blood specimens should be collected, with standard venipuncture technique, in a 4 ml vacuum collection tube containing EDTA (purple top tube). Tubes with a height of 75 mm to 100 mm are acceptable for use on the D10. The samples should be sent to the laboratory the same day of collection. If needed, the samples may be stored 3 days at room temperature or up to 7 days at 2-8 °C.

REFERENCES:

1. Hadjadj S et al. Diabetes Metab. 2005;31:290-294
2. Jeppsen JO et al. Clin Chem Lab Med. 2002;40(1):78-89

METHOD: High Performance Liquid Chromatography (HPLC)

HbA_{1C} REFERENCE RANGE

Hemoglobin A _{1C} (%)	Degree of Glucose Control
	> 8 Action Suggested
	< 7 Goal
	< 6 Non-diabetic Level

Turnaround time: 2 days