



## Fluoride Anticoagulant Vials are Ideal for HbA1c Estimation in India

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### Abstract

*In developing country like India fasting (FBS) and post prandial blood sugar (PPBS) has always been used for diagnosing diabetes. HbA1c is seldom used for diagnosis. Almost all HbA1c test accompanies blood sugar tests, and only in 4.56% HbA1c is done alone. In this case two samples need to be collected – one in Na-fluoride/Na<sub>2</sub> EDTA vials for blood sugar estimation and another in EDTA vial for HbA1c. We suggest through our study that the same Na-fluoride/Na<sub>2</sub> EDTA vials can be used for both the tests, without any change in test quality and results. This will reduce patient's inconveniences and will also reduce the cost of HbA1c tests to a certain extent.*

**Keywords:** FBS, PPBS, HbA1c, Na-fluoride/Na<sub>2</sub> EDTA

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Apart from the role of glycated hemoglobin (HbA1c) in monitoring of diabetes, by 2010 all the major expert committee and associations across the globe including the ADA has recommended HbA1c for the diagnosis of Type 2 DM [1]. In India, however HbA1c has not gained enough confidence among the treating physicians, where physicians seldom rely on HbA1c reports alone to know the diabetic status of their patients. Almost all HbA1c tests request is accompanied by a blood sugar test request. A three month observation of HbA1c test requests in the Central Clinical laboratory of R D Gardi Medical College revealed that only HbA1c test requests (without accompanying blood sugar test) was done in merely 4.56 % cases. The detailed observations are depicted in Table 1. The rest of the HbA1c test requests always accompanied with either alone/combination of blood sugar test requests; like fasting blood sugar (FBS), post prandial blood sugar (PPBS) or random blood sugar (RBS).

**Table 1.** Showing different tests accompanying HbA1c test requests

| Test               | Total no. of test | % of total HbA1c test request |
|--------------------|-------------------|-------------------------------|
| <b>Total HbA1c</b> | <b>263</b>        |                               |
| HbA1c & FBS        | 127               | 48.29                         |
| HbA1c, FBS & PPBS  | 53                | 20.15                         |
| HbA1c & PPBS       | 10                | 3.80                          |
| HbA1c, FBS & RBS   | 24                | 9.13                          |
| HbA1c & RBS        | 114               | 43.35                         |
| Only HbA1c         | 12                | 4.56                          |

So, when approximately 95% of the HbA1c test requests are accompanied by blood sugar test requests, collection of two separate samples for HbA1c test and for blood sugar test is inconvenient for the patients as well as for the phlebotomist. Sample for blood sugar testing is mostly collected in Na-fluoride/Na<sub>2</sub> EDTA vials, as glycolysis is inhibited in these vials [1,2]. Most of the commercial kits for HbA1c estimation requires sample to be collected in EDTA vial. However, in our previous studies we have proved that there is no significant change in the HbA1c values estimated by HPLC using BioRad D10 (Hercules, California) in the vials containing different anticoagulant, and samples are also stable for seven days in all the vials [2,3]. A recent study by Singh B et al also showed that there is no difference in HbA1c measurements in Na-fluoride and EDTA vial, when measured by agglutination assay using autoanalyzer MISPA i (Agappe, India) [4].

It will therefore be advantageous to measure HbA1c in Na-fluoride/Na<sub>2</sub> EDTA (or Na-fluoride/potassium oxalate) vials because:

1. In India most of the HbA1 estimation still accompanies with blood sugar estimation,
2. Blood sugar test are done in Na-fluoride/Na<sub>2</sub> EDTA (or Na-fluoride/potassium oxalate) vials where glycolysis by blood cells are prevented,
3. Unnecessary extra sample collection is not needed,
4. Convenient for the patients as well as the phlebotomist, and
5. Using the same vial for two tests can in turn reduces the cost of HbA1c test, which is undoubtedly a costly test in India.

### References

1. Sarmah D, Sharma B. Importance and status of HBA1C in T2DM and its Indian perspective. Asian Journal of Biomedical and Pharmaceutical Sciences. 2012;2(12):1-10.
2. Sharma B, Sarmah D, Sonker P. Effect of different anticoagulants on HbA1c estimation and its stability. J Lab Physicians. 2013;5(2):143-4.
3. Sarmah D, Sharma B. A Comparative evaluation of HbA1c measurement in different anticoagulant vials and its stability on storage. IJCRR. 2013;5(11):73-9.
4. Singh B, Singh K, Mahdi AA. Estimation of glycated hemoglobin sample in sodium fluoride vacutainer: A better option. J Clin Exp Invest. 2014;5(2): 336-8.