Effect of Storage on the Activity of Beta-Galactosidase in DBS: Results After Five Years at 4°C.

Sartori, N.R.; Goldim, M; Castilhos, C.D.; Coelho, J.C.

Departamento de Bioquímica, UFRGS, Brazil.

Dried blood spots on filter paper (DBS) is currently used as screening for multiple Lysosomal Storage Disorders, including GM1 Gangliosidosis, which is caused by deficiency of the enzyme beta-galactosidase (b-gal). But there are few studies related to the stability of this enzyme on DBS. This study aimed to investigate the stability of b-gal activity in DBS, after five years of sample storage at 4°C. Blood were collected (10mL) from 13 healthy individuals in three different ways: without anticoagulant, EDTA and heparin. After collection they were dropped with Pasteur pipette on filter paper Whatmann 903. The enzymatic activity of b-gal was measured at collection and after five years. For this purpose, we use the technique of Civallero et al. (2006), with adaptations. During this period all samples were stored at 4°C. After five years shows that there was a significant decrease in enzyme activity (p <0.001) in the three forms of collection, representing a 41% reduction, so remained only 59% of the original activity. In addition, there were no significant differences in b-gal activity among the three groups of collection. It follows therefore that all three types of collection can be used to measure the enzyme activity, but that samples of DBS can’t be stored for so long with risk of loss of enzyme activity and increased number of false positives diagnosis of GM1 Gangliosidosis.

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