

Thesis Title Diagnosis of Thalassemia and Abnormal
 Hemoglobin in Thailand by HPLC System

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ABSTRACT

Laboratory diagnosis of thalassemia and abnormal hemoglobin by conventional techniques are based on a combination of tests such as red cell morphology, red cell indices, hemoglobin electrophoresis, Hb A₂ quantitation and Hb F evaluation. Most laboratories have the problem to set up the accuracy, precision and sensitivity of methods. Recent technology of High Performance Liquid Chromatography (HPLC) has been adapted to a fully automated analysis of whole blood for the diagnosis of thalassemia and abnormal hemoglobin. β -Thalassemia short program (BTS) and α -thalassemia short program (ATS) of VARIANT Hemoglobin Testing System have been studied. The BTS program had accuracy and precision of the BTS program were comparable to the conventional method. Quantitation of Hb A₂(E) and F by BTS showed good correlation with the conventional techniques ($r=0.987$ and 0.991 , respectively). The ATS program that developed to identify and quantitate Hb Bart's in α -thalassemia, was applied to determine of Hb Bart's in cord blood. It was shown that the technique of ATS could be used for determining the incidence of α -thalassemia in newborn as good as conventional technique. Hb Bart's

determined by ATS had good correlation with the conventional technique ($r=0.998$). The VARIANT system is convenient and rapid method suitable for mass screening of thalassemia and abnormal hemoglobins in the future.