

## Abstract

The present thesis deals with the laboratory determination of the functional activity of coagulation factor VIII. It is one of the coagulation factors involved in hemostasis. Its deficit or functional deficiency leads to a severe bleeding disorder – haemophilia A.

The aim of the theoretical part of this thesis is to create a brief overview of the coagulation factor VIII – heredity, structure, biosynthesis, secretion and function in the organism. It also describes haemophilia A, which is a disorder caused by a lack of synthesis, functional defects or the presence of inhibitors against the coagulation factor VIII. The history of the disease, clinical classification, etiopathogenesis, diagnosis and treatment are described in this part. Laboratory methods for determination of coagulation factor VIII and its specific inhibitor are described in the last part.

The practical part deals with the determination of the functional activity of the coagulation factor VIII by the commonly used coagulant method and also by the chromogenic method. The aim is to compare the results and evaluate them statistically.

The study was performed on the mechanical automatic coagulometer STA-R Evolution from the company Diagnostica Stago. Samples from 83 patients were included in the examined group. Not only plasma samples of “normal appearance” but also hemolytic, icteric and chylous plasma samples were selected for the best comparison of methods. The method of linear regression was used for the statistical evaluation of measured results. The measured values of activity of the factor VIII by the coagulant and chromogenic methods correlate very well together (equation of line  $y = 0,9777x + 1,7028$ ;  $r = 0,991$ ). A falsely low result of the functional activity of the factor VIII was detected on a few patients who were positive for antibodies lupus anticoagulant. It was the coagulant method which showed this low result.

The chromogenic method is a suitable alternative for the coagulant method to investigate the functional activity of the coagulation factor VIII. It is possible to investigate hemolytic, icteric and chylous samples without a significantly affected result. The investigation by the chromogenic method is more expensive than by the coagulant method

but the advantage of the chromogenic method is that it can be used for patients who are positive for antibodies lupus anticoagulant.

Keywords: coagulation factor VIII, haemophilia A, determination of the functional activity of factor VIII