

## **ABSTRACT**

The main target of the thesis was to develop an automated method for the isolation of endoglin from a sample using a magnetic immunosorbent in Lab-In-Syringe with subsequent immunodetection by affiblot.

The theoretical part deals with endoglin, in its membrane and soluble form, especially with their connection to endothelial dysfunction. The principles of anti-endoglin therapy using the monoclonal antibody carotuximab or TRC105 are also briefly described here. Furthermore, the theoretical part summarizes the basics of the automation in Lab-In-Syringe and of the affiblot technique, their principles, and their applications. The last chapter deals with the biofunctionalization of magnetic particles by antibodies in order to prepare a magnetic immunosorbent which is used for the isolation of proteins from a complex sample.

The experimental part describes methods for testing the affiblot prototypes. The main goal was to develop a method for the preparation of anti-endoglin magnetic immunosorbent and to increase the capacity of the method by upscaling it from a 1 ml to a 5 ml syringe. Furthermore, methods for the isolation of the soluble form of human endoglin from the culture medium containing the drug TRC105 were developed for 1 ml and 5 ml syringes. Various experiments were carried out to optimize the methods in Lab-In-Syringe and finally, the methods were tested with samples and the results were verified on affiblot.

**Keywords:** endoglin, Lab-In-Syringe, magnetic particles, magnetic stirrer, syringe, immunosorbent, affiblot, antibody