ABSTRACT

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Thesis title: The Impact of Apixaban on Overall Hemostatic Potential

Disorders at certain levels of the complicated haemostatic system can lead to either bleeding or excessive blood coagulation. These pathological conditions are treated with anticoagulants, which aim to correct excessive coagulation. However, traditional anticoagulant therapy has many limitations, which initiated efforts to develop oral anticoagulants with a better profile. These new-generation anticoagulants are called DOAC - Direct Oral AntiCoagulans. Apixaban, as one of xabans, has predictable pharmacokinetics and pharmacodynamics and therefore does not require a routine laboratory monitoring of the treatment effect. Nevertheless, it still requires evaluation in urgent clinical situations. Standard coagulation screening assays, e.g., PT (prothrombin test) and APTT (activated partial thromboplastin test), do not fully reflect the actual status of the drug. Therefore, researchers aim is to find a relatively simple and fast hemostatic assay that would correlate with the actual condition of the patient. One of them could be the method of overal hemostatic potential (OHP), which is based on spectrophotometric registration of fibrin formation and its degradation in plasma. In our study, OHP has been used in patients treated with apixaban. This thesis evaluated its reproducibility (CV = 24.9 %) and the relationship between the total hemostatic potential and apixaban plasma concentration (R = -0.418), showing a weak correlation. Weak correlation was also observed between the time of coagulation and apixaban concentration (R = 0.277) as well as in PT (R = 0.501) and APTT (R = 0.360). In view of our results, we conclude that the total hemostatic potential assay cannot be used to monitor patients treated with apixaban. Yet, OHP presents a method with great potential that can serve as a starting point for the search for new approaches to understanding haemostasis as a highly complex whole.