

The aim of this bachelor thesis was to introduce and validate the method for the determination of vancomycin and its crystalline degradation products by high performance liquid chromatography with detection by diode-array detector. This method is able to reliably detect and distinguish the crystalline degradation products of vancomycin, which lack the necessary therapeutic effect. The long-term using of vancomycin or renal insufficiency lead to their accumulation in the patient's body. Another target of this bachelor thesis was to monitor the release profile of vancomycin concentration and its crystalline degradation products from local carrier of antibiotics that are used in some complicated orthopedic surgeries such as prevention of inflammatory infections caused by *Staphylococcus aureus*. We compared in vitro release of vancomycin from two bone grafts, two different bone cements and from one synthetic bone graft. The aim was to determine if the examine material releases the quantity of vancomycin, which ensure the long-term local concentrations of vancomycin higher than is the MIC of vancomycin-resistant *Staphylococcus aureus* (VRSA).