Parenteral nutrition mixtures are highly complex forms of drugs. They are used to provide all essential nutrients and energy: amino acids, fats, carbohydrates, vitamins and microelements to patients who can not be fed orally neither enterally.
In the literature, there are few reports about possibility of co-administration of drugs with parenteral nutrition mixtures. Currently, in most cases parenterally fed patients, who receive intravenouse infusion have multichannel central catheters or the infusion and parenteral nutrition mixture are administrated intermittently. Those administration methods may cause severe adverse effects leading to blood glucose level disturbances, impaired nutrients metabolism, increased fluid supply (fluid overload) and significantly increased risk of septic complications. Furthermore, it is known that even short-term co-administration of some drugs with parenteral nutrition mixtures using Y-connector can result in precipitation or a phase separation of the emulsion. Treatment of infections is one of the challenges of modern medicine. Therefore, the effect of selected antibiotics (penicillin group, cephalosporins, aminoglycosides, carbapenems, glycopeptides and polymyxin), chemotherapeutics (sulfonamides, imidazole derivatives, fluoroquinolone) and antifungal medicines (triazole and echinocandin) on the stability of parenteral nutrition mixtures will be studied. Subsequently, the influence of parenteral nutrition mixture components on selected drugs will be determinated by isolation, identification and quantification of drugs and degradation products. In the case of medicines that will meet the requirements of administration in the parenteral nutrition mixture, their compatibility with other medicines used in infections and cardiovascular system disease treatment will be determined.
The obtained results will have cognitive character widening current state of knowledge about drug interactions with components of parenteral nutrition mixtures and demonstrating the profile of drug degradations products arising in such conditions. Moreover, the results of the research will have the application character enabling safe and effective treatment of infections (including severe systemic infections) in patients fed parenterally.