

The aim of the project is to determine the effect of attachment of metallacarboranes to therapeutic peptides on the physicochemical and biological properties of the peptides. The studies planned in the project will allow us to determine whether metallacarboranes can be used to modify the pharmacokinetic and pharmacodynamic properties of peptides. In the project, a therapeutic peptide of high therapeutic importance – insulin – was selected, with a view to develop long-acting insulin analogs used in diabetes therapies. The selected peptide will allow us to determine the effect of attachment of metallacarborane on many parameters, such as secondary and tertiary structure of peptides, allosteric changes, ability to form nanostructures, interaction with serum albumin, as well as biological activity.

The results of this project will increase our knowledge about the effect of attachment of metallacarboranes to peptides on the physicochemical and biological properties of these peptides. The knowledge acquired in the project will allow to assess the potential of application of metallacarboranes to improve the pharmacokinetic and pharmacodynamic properties of therapeutic peptides. The development of new strategies to improve the pharmacological properties of peptides may result in an increase in the number of peptide-based drugs in the treatment of many diseases.