DESCRIPTION FOR THE GENERAL PUBLIC

The aim of the project is to develop new chemical compounds that may be useful in pharmacological studies on the treatment of conditions such as depression or Parkinson's disease. Their novel feature is to be able to selectively act on certain parts of the brain and therefore "intelligently" target those which dysfunction is associated with specific diseases.

One of the main receptors for serotonin in the brain – the 5-HT_{1A} receptor – is localized in different brain structures and executes specified functions there. Effects of stimulation of different subgroups of 5-HT_{1A} receptor, however, are different, and most importantly, they can be contradictory. Thus, stimulation of all of these receptors at the same time gives a weaker effect than the selective activation of only one sub-group responsible for a specific operation.

Unfortunately, psychoactive substances available so far, do not distinguish between these different subgroups of receptors, so that their action cannot achieve maximum therapeutic possibilities resulting from stimulation of 5-HT_{1A} receptor.

It has been determined that there is a possibility of such a design of new molecules that they are able to stimulate only the selected subgroup of 5-HT_{1A} receptors and thereby achieve greater therapeutic efficacy.

The result of our project is to create such selective molecules, that will both enhance knowledge of the functioning of the brain, and could help in the development of new, more effective drugs against depression or Parkinson's disease.