

Abstract

This Bachelor's thesis deals with preparation of fluorescently labeled opiates, which allow detection of μ -opioid receptors and study of their interaction with ligands, using fluorescent techniques.

As substrates designated for chemical modifications were chosen semi-synthetic opiates, naloxone and naltrexone. Their conversion to corresponding C-6 hydrazones allowed further modifications of these substances and tracking, if any changes to their ability to interact with μ -opioid receptors occur.

Firstly, known adducts of these hydrazones with fluorescein isothiocyanate were prepared. Then, we inserted linkers of different lengths between the opiate fragment and the fluorescent tag, systematically. Mentioned linkers were prepared from tetraethyleneglycole derivatives with aim to study binding constants of modified μ -opioid receptor ligands.

In the end, we decided to prepare opiate conjugate with particular linkers of length corresponding, approximately, to decaethyleneglycole. Two different procedures were proposed for the preparation of this linker. One of them used click chemistry concept and the other was based on classic amide coupling.

Both conjugates were converted to adducts with fluorescein to verify their specific binding to μ -opioid receptors. They were also provided to co-operating group, which will use them for preparation of synthetic antibody for μ -opioid receptors.

Key words: *fluorescent tag, opiates, synthesis*