

# Quaternary protoberberine alkaloids and their interaction to DNA

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## *Abstract*

The main goal of my work is the study of natural substances (mostly different groups of alkaloids) and their interaction to non-canonical DNA structures. I have focused mainly on G-quadruplex and i-motif structures, which play a role in several important cellular processes. Spectroscopic methods are used to measure the degree of interaction - especially circular dichroism, UV-Vis spectrometry and spectrofluorimetry. Melting points as well as the increase in fluorescence of oligonucleotides mixed with ligands are measured compared to measurements in the absence of ligand.

The results show that some alkaloids, e.g. from the group of benzo[c]phenanthridines, selectively stabilize G-quadruplex structures compared to other secondary structures (Jarosova et al., 2018) found in cells. Representatives of the group of quaternary protoberberine alkaloids also show similar results of more pronounced stabilization (Jarosova et al., 2019). Studies of the interaction of i-motifs with the same group of alkaloids do not show a significant degree of stabilization by these ligands, but interesting results are obtained with measurements with some alkaloids from the group of protoberberines.

At this time, I am focusing on the research of the alkaloid escholidine and its interaction with the mentioned structures mentioned above.

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