EXECUTIVE SUMMARY OF THE MINOR RESEARCH PROJECT

ORGANIC SYNTHESIS ON FLUORESCENT SCAFFOLDS: TOWARDS NOVEL HYDROPHILIC BODIPY'S

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Fluorescent probes are one of the cornerstones of real-time imaging of live cells and a powerful tool for cell biologists and have enormous importance in biomedical research and medical imaging. One of the significant challenges for the design of novel fluorescent molecules is the demand of water likable versions that fluoresce strongly in the aqueous media. With this aim, we have attempted the synthesis of the Donor acceptor cyclopropane framework on a fluorescent BODIPY scaffold. Our key strategy was to introduce polar moieties such as substituted pyrroles, piperidines, tetrahydro carbazoles and oxazines on the BODIPY scaffold through the reactions of Donor acceptor cyclopropane. However, due to the problems associated with the synthesis of the intermediate compound, the target is not achieved so far. In the meantime, we have successfully achieved the synthesis of another fluorescent coumarin based scaffold. The synthetic route is based on two classical name reactions, Baylis-Hillman and Achmatowicz reactions. The new framework is suitable for the synthesis of several complex Oxa bridged systems through dipolar cycloaddition reactions. We also plan to do the Oxa bridge opening of the anticipated products, as this reaction may lead to novel tropolone-coumarin appended molecules. Since tropolone and coumarin scaffolds are independently known for their biological activities, we expect these novel hybrid molecules to show dual mode of action.

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