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IOCB PRAGUE

Ústav organické chemie a biochemie  
Akademie věd České republiky, v. v. i.  
Institute of Organic Chemistry and Biochemistry  
of the Czech Academy of Sciences

Supervisor's evaluation and report  
on PhD thesis

**Synthesis, Biological Profiling and Photophysical Properties of  
Polycyclic Hetero-Fused 7-Deazapurine Nucleosides**

author: **Chao Yang**

**Chao Yang** performed his PhD research project under my supervision from 2017 till 2022. The aim of his PhD thesis was the synthesis of novel nucleosides derived from polycyclic hetero-fused deazapurine bases. In the first part, he developed the synthesis of two isomeric series of benzothieno-fused deazapurine nucleosides, synthesized a series of derivatives for biological testing and also synthesized a modified dNTP and studied its incorporation to DNA for fluorescent labelling. In the second part, he developed a new approach for the synthesis of several new types of polycyclic thieno-fused deazapurines based on C-H dibenzothiophenation followed by the Negishi cross-coupling and heterocyclization. Also in this case, he was able to synthesize a large series of nucleosides for biological activity testing (where several new cytostatic derivatives were identified), as well as a dNTP which he enzymatically incorporated into DNA. The results were published in 2 papers with Chao Yang as the first author (JOC and JACS) and he participated as co-author on one additional paper.

Chao is a talented and hardworking chemist. He worked independently and with a lot of enthusiasm. He gained broad spectrum of experience in organic synthesis as well as some basic knowledge of biochemistry. He has a good potential for further career in science.

I am happy to conclude that **Chao Yang** fulfilled all the requirements for the PhD title and I recommend his thesis for defense and further proceeding to be awarded the PhD degree.

In Prague January 19, 2023



Prof. Ing. Michal Hocek, CSc., DSc.