

ABSTRACT

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Title of Diploma Thesis Synthesis of new organic compounds containing chalcogens

A new triazole containing selenium was prepared by Huisgen 1,3-dipolar cycloaddition of alkyne and azide, known as the click reaction. Another two tetrazoles were synthesized by click reaction. Both compounds have the same structure, except the first compound is tetrazole bound to selenium, in the second compound to sulfur. Additionally, two more compounds contain the SeCN fragment and sulfur at the aromatic ring was prepared.

The focus of this thesis is on the synthesis of new organic compounds containing chalcogens, specifically sulfur and selenium. Due to the presence of chalcogens in the structure, they are expected to show antioxidant, anticancer, antifungal or antibacterial effects or a combination thereof.

A new triazole was synthesized and subsequently characterised by TLC, $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and MS. It is suitable for future testing of biological activity. Tetrazole containing sulfur was prepared. The final product is, however, unstable and prone to rapid degradation. Using the same reaction condition, tetrazole containing sulfur was not synthesized. Two compounds with SeCN fragment and sulfur at the aromatic ring were prepared. The final products were partially hydrolysed during purification and are therefore unsuitable for further biological testing.

Keywords:

Click chemistry, selenium, sulfur, cycloaddition, selenocyanate, copper, organoselenium compounds