21 Ružičkini dani
DANAS ZNANOST – SUTRA INDUSTRIJA
9. – 11. rujna 2026. • Vukovar • Hrvatska

PTFOS SVEUČILIŠTE JOSIPA JURJA STROSSMAYERA U OSIJEKU
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SINTEZA I ELEKTROKEMIJSKA SVOJSTVA DVA ODABRANA KINAZOLINONA

SYNTHESIS AND ELECTROCHEMICAL PROPERTIES OF TWO SELECTED QUINAZOLINONES

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INTRODUCTION

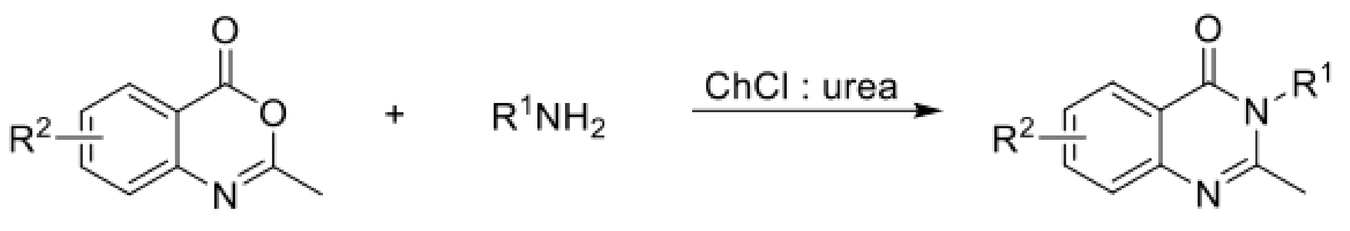
The two selected quinazolinone derivatives (3-(4-hydroxyphenyl)-2-methylquinazolin-4(3*H*)-one and 6-bromo-3-(4-hydroxyphenyl)-2-methylquinazolin-4(3*H*)-one) were synthesized using deep eutectic solvents, and their electrochemical properties are investigated.

After synthesis, the electrochemical properties of the synthesized quinazolinone compounds are investigated using cyclic voltammetry in a non-aqueous medium, and the influence of scan rate, chemical structure, and concentration on the electrochemical response, as well as their influence on the response of the electrochemical DNA biosensor, are determined.

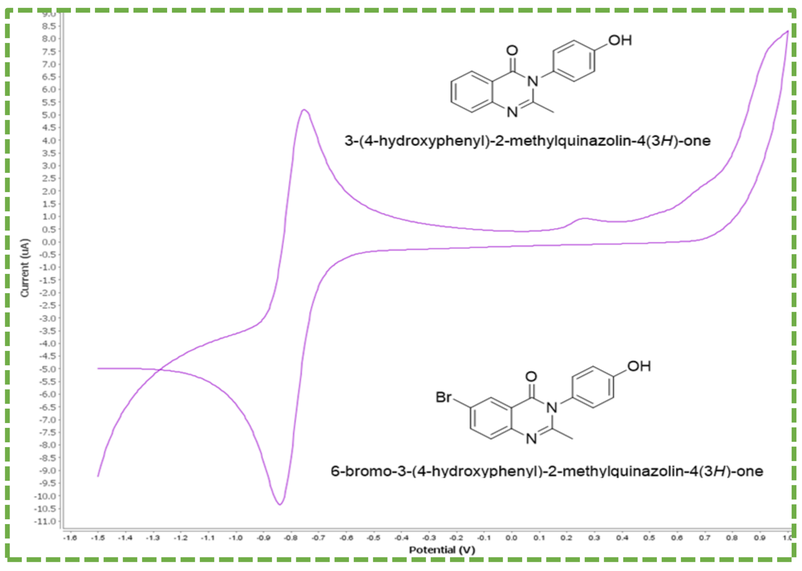
METHODS

The reaction mixture of 2-methylbenzoxazin-4-one (1 mmol) and aromatic amines (1.2 mmol) in a solvent of ChCl : urea (1 mL) was milled for 20 minutes at 6 m/s. The reaction was monitored by TLC, and upon completion, water was added to the reaction mixture. The precipitated product was separated by filtration, washed with water and recrystallized from ethanol or methanol.

Cyclic voltammetry was performed in the potential range of -1.5 till 1.1 V at three-electrode system in 0.1 M TBAP in DMSO. The concentration of selected quinazolinones was 1 x 10^{-3} M.



RESULTS and CONCLUSION



The electrochemical results showed that the optimal scan rate was 50 mV s^{-1}. The influence of concentration on the electrochemical response of both quinazolinones showed linearity in the range between $1 \cdot 10^{-5}$ and $1.9 \cdot 10^{-4}$ mol L^{-1}. Further, the influence of the chemical structure of both quinazolinones showed two peaks, one at 0.3 V, which may be attributed to the oxidation of the aromatic ring of quinazolinone, and the other at 0.75 V to the carbonyl group of the quinazolinone ring. The response of the electrochemical DNA biosensor showed a relative portion of survived DNA of around 80% for both quinazolinone. Both synthesized quinazolinones showed good concentration linearity and diminished the degree of DNA damage.

Funded by the European Union

This research was funded by the European Union – NextGenerationEU, Institutional Research Project "Environmentally friendly methods for the synthesis and extraction of organic compounds with potential biological activity" (581-UNIOS-92).