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Analitik Kimya Anabilim Dalı öğretim üyelerimiz Doç. Dr. Cem Erkmen ve Dr. Öğr. Üyesi Zeynep Türk'ün "Nanomaterial-Based Electrochemical Microdevices for Rifampicin Sensing: A Focused Review" başlıklı çalışması Q1 kapsamında yer alan *Biomedical Materials & Devices* dergisinde yayınlandı.

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REVIEW

Nanomaterial-Based Electrochemical Microdevices for Rifampicin Sensing: A Focused Review

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Abstract
Rifampicin (RIF) remains a cornerstone of tuberculosis therapy; however, its clinical efficacy is highly dependent on achieving optimal systemic exposure, supporting the need for rapid and reliable monitoring approaches in therapeutic drug management. Conventional analytical techniques are often laboratory-bound, time-consuming, and unsuitable for decentralized or real-time applications. In this context, nanomaterial-enabled electrochemical sensing has emerged as a promising strategy for integration into biomedical microdevices, offering rapid response, low sample consumption, and compatibility with miniaturized platforms. This review provides a focused and critical evaluation of recent advances in nanomaterial-based electrochemical interfaces for RIF detection, with particular emphasis on their suitability for incorporation into portable and microfluidic device architectures. Carbon nanostructures, metal and metal-oxide nanomaterials, MXenes, metal–organic frameworks, molecularly imprinted polymers, and hybrid biosensing systems are systematically compared in terms of their structure–property-performance relationships and their ability to enhance electron-transfer kinetics, adsorption behavior, and electrocatalytic activity. Beyond analytical performance metrics such as detection limits and linear dynamic range, the review highlights key parameters governing device-level implementation, including surface stability, anti-fouling properties, reproducibility, and compatibility with complex biological matrices. Importantly, we discuss current progress toward integrating these sensing platforms into miniaturized and point-of-care systems, including screen-printed electrodes, flexible substrates, and microfluidic-assisted analytical devices. Remaining challenges-such as long-term operational stability, inter-device reproducibility, and clinical validation-are critically addressed. By bridging the gap between nanomaterial-based sensor development and biomedical microdevice engineering, this work provides a practical framework for advancing RIF detection technologies toward potential real-world diagnostic and therapeutic monitoring applications.

Keywords Antibiotics · Microdevices · Electrochemical sensors · Nanomaterials · Rifampicin · Tuberculosis

Analitik Kimya Anabilim Dalı öğretim üyemiz Doç. Dr. Cem Erkmen'in "Biophysical insights into interaction mechanism of cediranib with human serum albumin: *In-vitro* and *in-silico* perspectives" başlıklı çalışması Q1 kapsamında yer alan *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* dergisinde yayınlandı.

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Biophysical insights into interaction mechanism of cediranib with human serum albumin: *In-vitro* and *in-silico* perspectives

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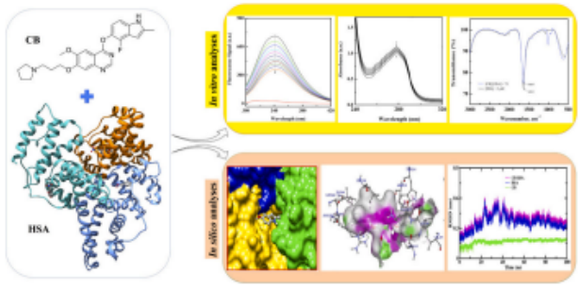
HIGHLIGHTS

- The protein's affinity for CB binding was intermediate.
- The CB–HSA complex was thought to be secured *via* van der Waals, H-bonds and hydrophobic interactions.
- Upon CB–HSA complexation, alterations in the structures (secondary and tertiary) of HSA were noticed.
- The protein was shielded from thermal denaturation by CB.
- Sudlow's site I of HSA was found to be the anticipated preferred binding point of CB.

GRAPHICAL ABSTRACT



ARTICLE INFO

Keywords:
Cediranib
Human serum albumin
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ABSTRACT

Cediranib (CB), a tyrosine kinase inhibitor, exhibits encouraging anticancer activity against breast, prostate, glioblastoma, and non-small cell lung cancer cells. This study used multi-spectral and computational analyses to elucidate the binding mechanism of CB to human serum albumin (HSA). The HSA fluorescence was substantially quenched upon CB binding and a static quenching mode was detected. An intermediate binding affinity was observed to govern the CB–HSA complex formation, while H-bonds, van der Waals, and hydrophobic interactions were supposed to stabilize the complex. The presence of CB in HSA solutions triggered variations in the secondary and tertiary structures of HSA as well as alterations in the microenvironment close to the protein fluorophores. The CB binding to HSA enhanced the protein's tolerance to thermal stress, and the addition of common metal ions to the reaction mixture resulted in minor deviations in the binding affinity of CB for HSA. The preferred binding pose of CB was positioned at Sudlow's site I of HSA, and the CB–HSA complex bound at site I persisted compact and stable through hydrogen bonds and hydrophobic interactions during molecular dynamics

Farmasötik Kimya Anabilim Dalı öğretim üyemiz Prof. Dr. Sevgi Karakuş'un TÜSEB 2024-A4-01- A GRUBU ACİL AR-GE PROJE ÇAĞRISI kapsamında desteklenen 39672 no'lu proje kaynaklı "Novel topoisomerase I/II dual inhibitors: Design, synthesis, and molecular docking studies of 1,3-thiazoline and 1,3,4-oxadiazole derivatives with anticancer activity against lung cancer" başlıklı çalışması Q1 kapsamında yer alan *European Journal of Medicinal Chemistry* dergisinde yayınlandı.

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Research paper

Novel topoisomerase I/II dual inhibitors: Design, synthesis, and molecular docking studies of 1,3-thiazoline and 1,3,4-oxadiazole derivatives with anticancer activity against lung cancer

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Thiosemicarbazide
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1,3,4-Oxadiazole
In silico
Topoisomerases I and II

ABSTRACT

Despite significant advances in cancer therapy, the discovery of new anticancer agents with improved efficacy remains an important challenge. Human DNA topoisomerases I and II are well-established therapeutic targets because of their essential roles in DNA replication and transcription. Accordingly, a series of novel etofenamate-based thiosemicarbazide, 1,3-thiazole, and 1,3,4-oxadiazole derivatives were designed and synthesized, including a new synthetic approach for the preparation of the oxadiazole derivatives, and evaluated as potential topoisomerase-targeting anticancer agents. All synthesized compounds were structurally characterized and evaluated for antiproliferative activity against the A549 human lung cancer cell line and for their inhibitory effects on human DNA topoisomerases I and II. Based on their overall biological performance, compounds 3h, 5 h, and 5i were selected for further biological characterization, including thioredoxin reductase 1 (TrxR1) inhibition, total oxidative status (TOS), Bax/Bcl-2 protein expression, Annexin V analysis, and crystal violet staining. Molecular docking studies were performed to investigate the binding modes of the lead compounds toward topoisomerases I and II. Biological evaluation identified compounds 3 h, 5h, and 5i as the most promising derivatives. Enzymatic assays revealed distinct topoisomerase inhibition profiles, with compound 5h acting as a selective topoisomerase I inhibitor and compound 5i exhibiting dual inhibitory activity against topoisomerases I and II. Molecular docking analyses supported these findings by revealing target-specific binding modes consistent with the observed inhibition profiles. Complementary cellular studies demonstrated TrxR1 inhibition, increased oxidative stress, apoptosis-associated cellular responses, and morphological alterations, providing additional mechanistic characterization of the lead compounds. Collectively, these findings establish topoisomerases I and II as relevant molecular targets for the synthesized series while broadening the biological characterization of the lead compounds through complementary cellular investigations. Compound 5i emerged as the most promising dual topoisomerase I/II inhibitor and represents a valuable lead for the further development of novel topoisomerase-targeting anticancer agents.

ECZACILIK FAKÜLTESİ

Temmuz-Ağustos

Eczacılık Fakültemiz Tercih ve Tanıtım Günlerinde Aday Öğrencilerle Buluştu

Eczacılık Fakültemiz, 20 Temmuz–10 Ağustos 2026 tarihlerinde İstanbul Aydın Üniversitesi Florya Kampüsü'nde ve 24–26 Temmuz 2026 tarihlerinde Lütfi Kırdar Kongre Merkezi'nde düzenlenen Üniversite Tercih ve Tanıtım Günleri kapsamında aday öğrenciler ve aileleriyle bir araya geldi.

Tanıtımda adaylara eczacılık mesleği, eğitim süreci, çalışma alanları ve üniversitemizin sunduğu olanaklar hakkında bilgi verilerek tercih süreçlerine destek olundu.

Akademisyenlerimizin ADEP Projesi Kabul Edildi

Eczacılık Fakültesi öğretim üyelerimiz Doç. Dr. Cem Erkmen ve Dr. Öğr. Üyesi Zeynep Türk ile İleri Araştırmalar Uygulama ve Araştırma Merkezi Müdürü Prof. Dr. Hasan Saygın'ın proje ekibinde yer aldığı çalışma, Marmara Üniversitesi yürütücülüğündeki Araştırma Üniversiteleri Destekleme Programı (ADEP) kapsamında kabul edildi.

"Fonksiyonelleştirilmiş Bimetalik Nanoparçacıklar İçeren Poliimid Nanokompozit Tabanlı Biyosensörlerin Geliştirilmesi ve Tenasin-C Biyobelirtecinin Elektrokimyasal Tayininde Kullanılması" başlıklı proje kapsamında yenilikçi biyosensör sistemlerinin geliştirilmesine yönelik çalışmalar gerçekleştirilecek. Projesi kabul edilen akademisyenlerimizi tebrik ediyor, çalışmalarında başarılar diliyoruz.