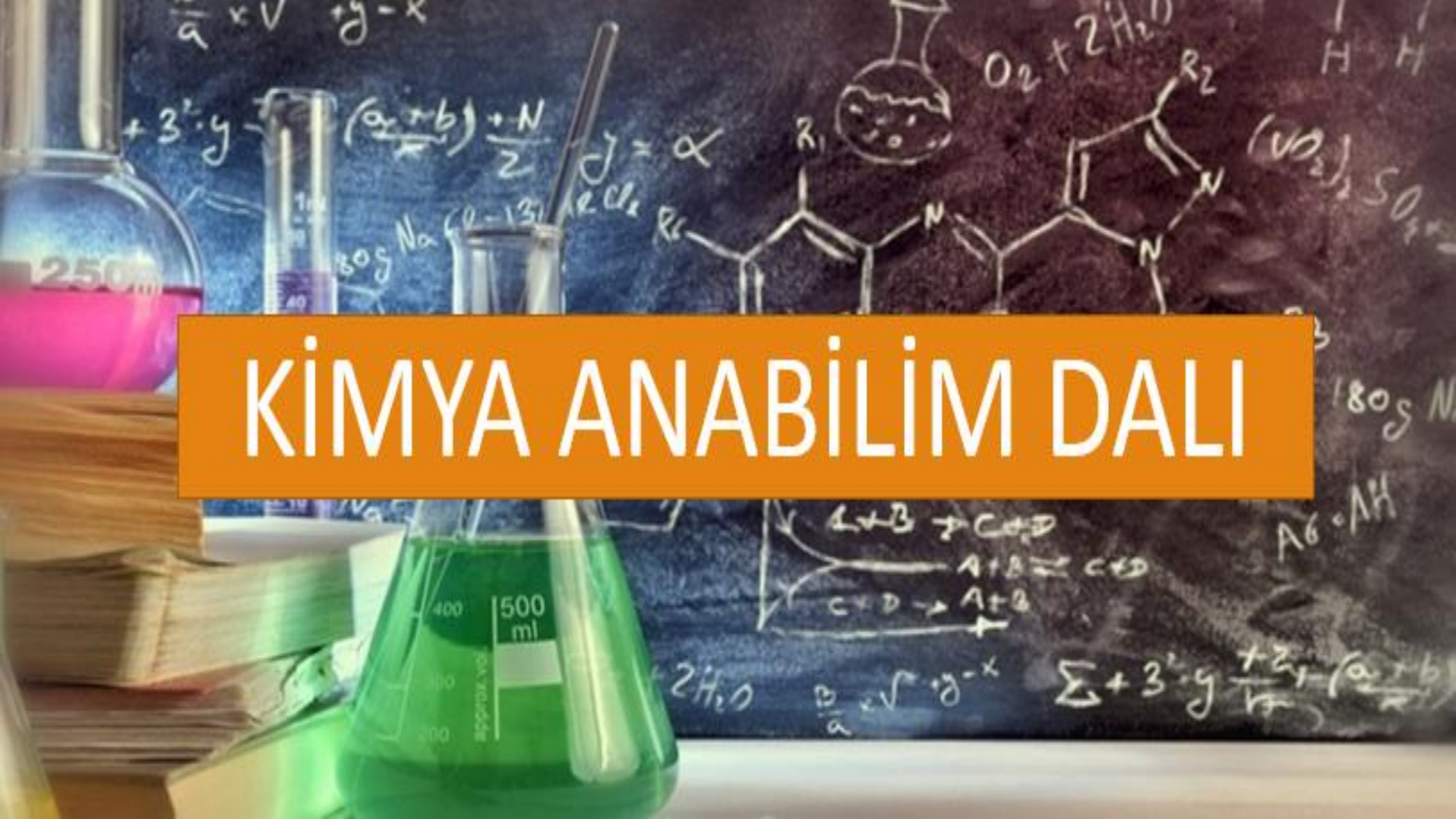
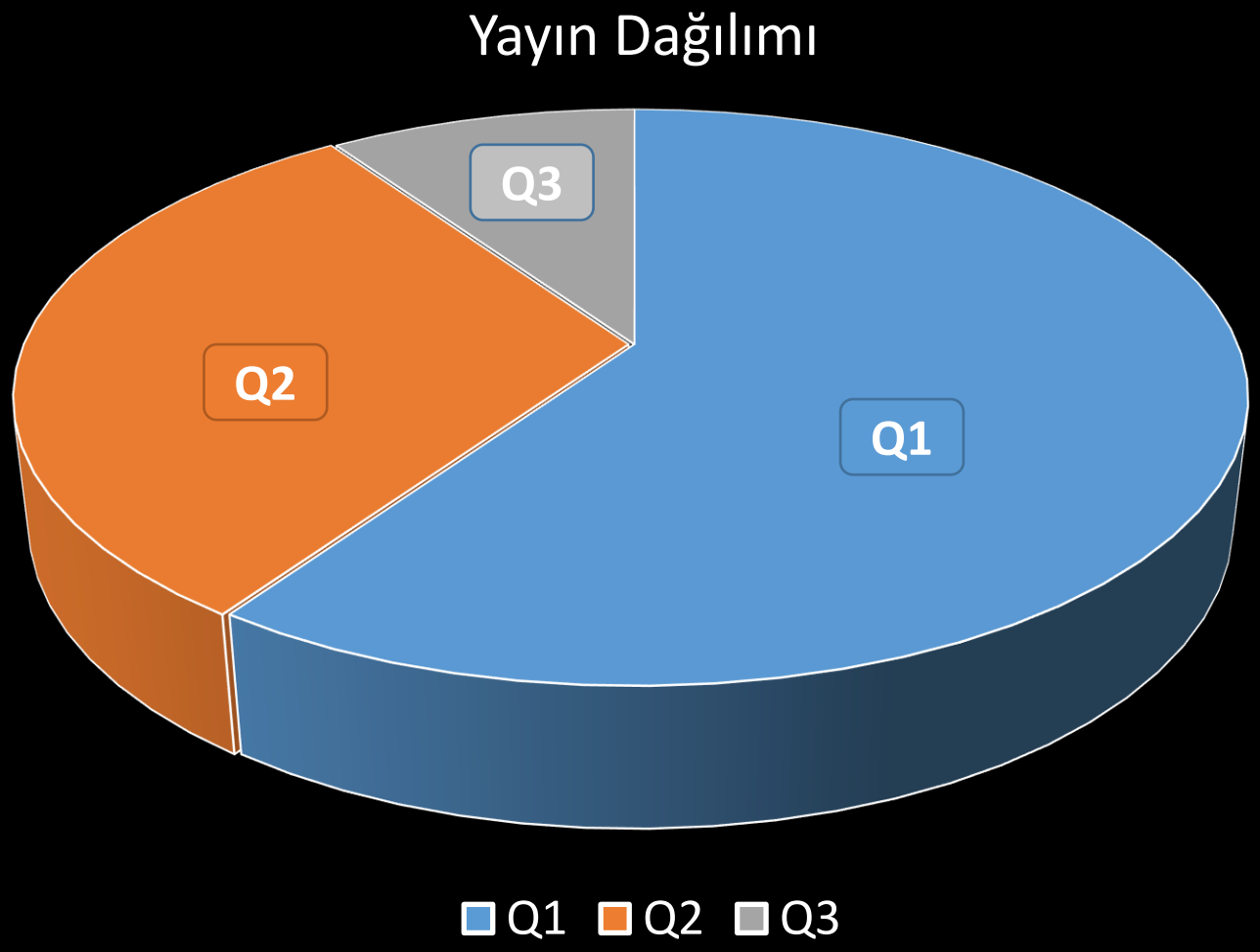

KİMYA ANABİLİM DALI

Kimya Anabilim Dalı Öğrenci Sayısı

Lisans Öğrenci Sayısı	**115**
Lisansüstü Öğrenci Sayısı	**13 Yüksek Lisans** **12 Doktora**

Kimya Anabilim Dalının Yayın Dağılımı 2020-2022 Yıllarındaki Yayın Sayısı: 52



Q1 Yayın Sayısı: 31
Q2 Yayın Sayısı: 16
Q3 Yayın Sayısı: 5

Öğretim Üyesi başına düşen yayın sayısı

52/13 = *4.00*

Analitik Kimya Alanında Yapılan Çalışmalar

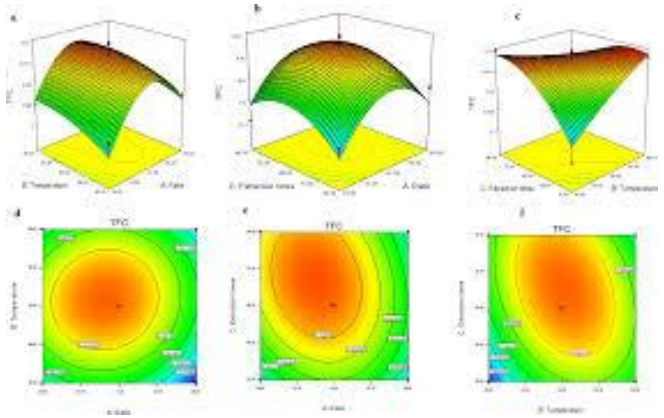
- ✓ Antioksidanlar, Gıda bileşenleri ve Enerjetik malzemelerin tayini için Klasik çözelti esaslı yöntemler, Optik sensörler ve Nanosensörler geliştirilmesi.
- ✓ Çeşitli biyoaktif bileşenlerin Gıda örneklerinden izolasyonu için yeni nesil yeşil ekstraksiyon yöntemlerinin geliştirilmesi ve modellenmesi.
- ✓ Elde edilen gıda ekstraktlarının kromatografik karakterizasyonu ve antioksidan aktivite özelliklerinin incelenmesi.
- ✓ Sentez edilen yeni organik ve anorganik bileşiklerin antioksidan özelliklerinin araştırılması.

- **Doğal antioksidanların ekstraksiyonuna ve karakterizasyonuna odaklanılan çalışmalar.**

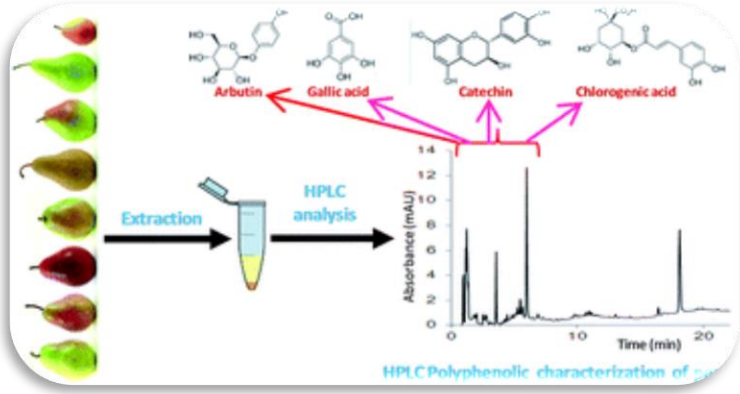




Ekstraksiyon

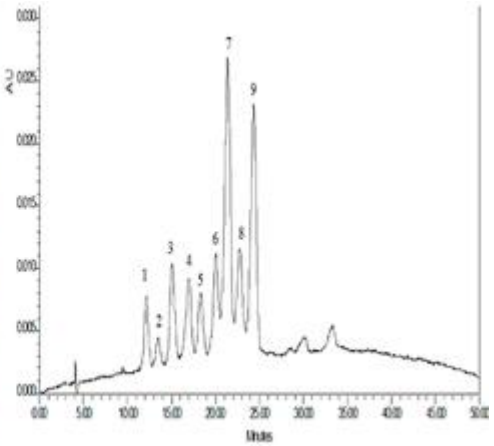


Optimizasyon ve Modelleme



Karakterizasyon





JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Article

pubs.acs.org/JAFC

Release and Degradation of Anthocyanins and Phenolics from Blueberry Pomace during Thermal Acid Hydrolysis and Dry Heating

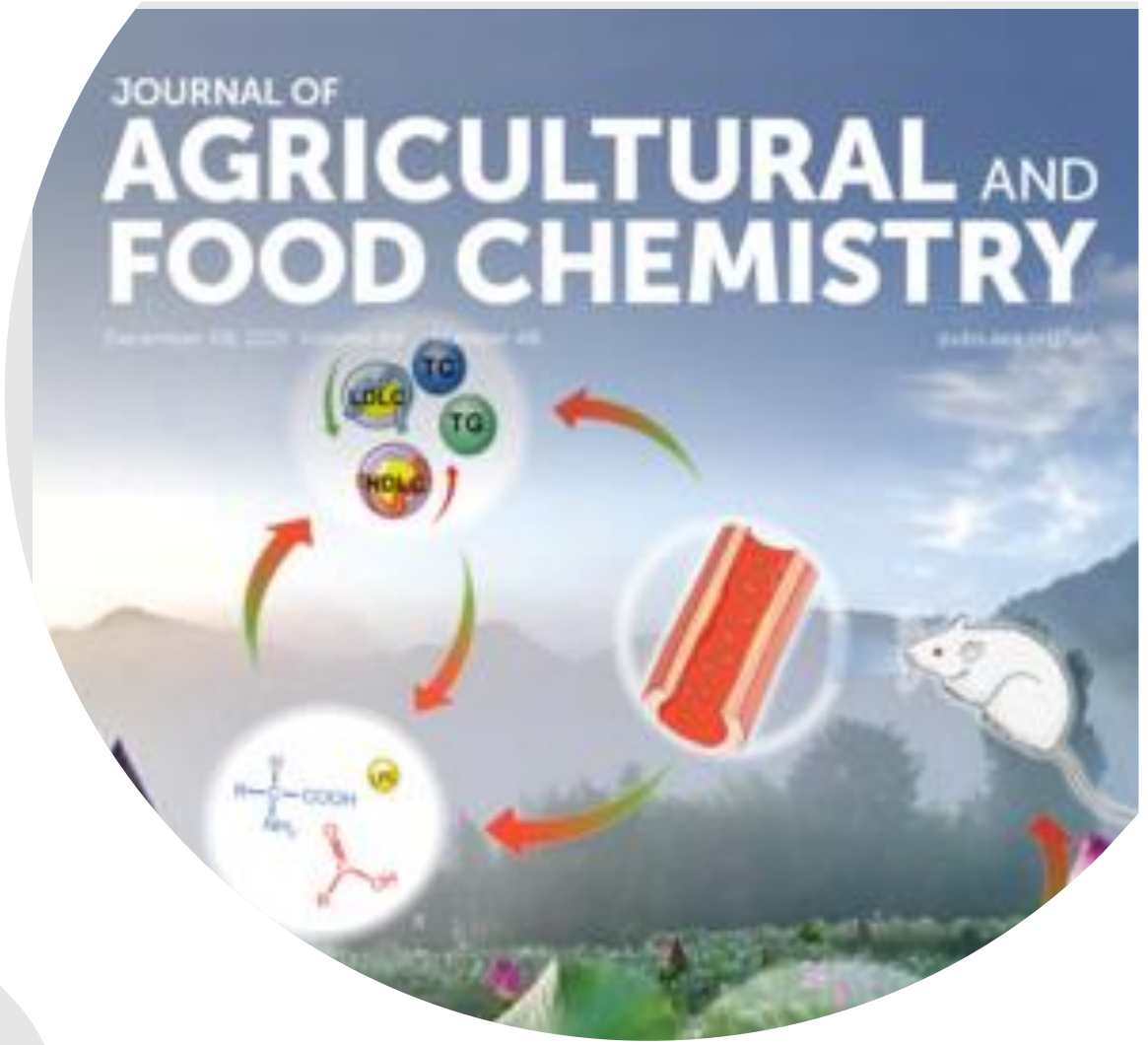
Mustafa Bener,[†] Yixiao Shen,[§] Reşat Apak,[†] John W. Finley,[§] and Zhimin Xu*[,§]

[†]Department of Chemistry, Faculty of Engineering, Istanbul University, Avcilar 34320, Istanbul, Turkey

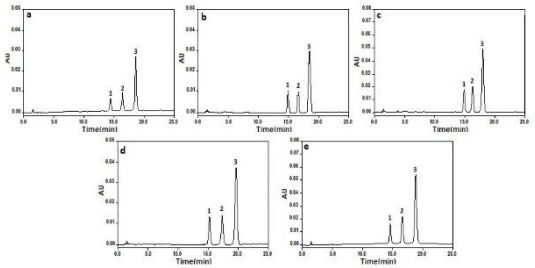
[§]Department of Food Science, Agricultural Center, Louisiana State University, Baton Rouge, Louisiana 70803, United States

ABSTRACT: In this study, blueberry pomace was soaked in pH 1, 4, or 7 solution for 10 min followed by boiling hydrolysis. Nine anthocyanins and 11 other phenolic compounds were released after acid hydrolysis. The highest anthocyanin release (4.70 mg/g) was achieved by boiling at pH 1 for 15 min followed by 3.94 mg/g at pH 4 and 3.46 mg/g at pH 7. Phenolics were released more quickly than anthocyanins during boiling. The change of antioxidant activity of the pomace during boiling was correlated with the total phenolic content but not anthocyanin content. The degradation rate of anthocyanins during boiling eventually surpassed the release rate from the pomace. Protocatechuic acid and catechin continuously increased during heating. Dry heat resulted in continuous degradation of anthocyanins and other phenolics in the pomace. The reduction in antioxidant activity of the pomace during dry heating was correlated with both the phenolic and anthocyanin contents.

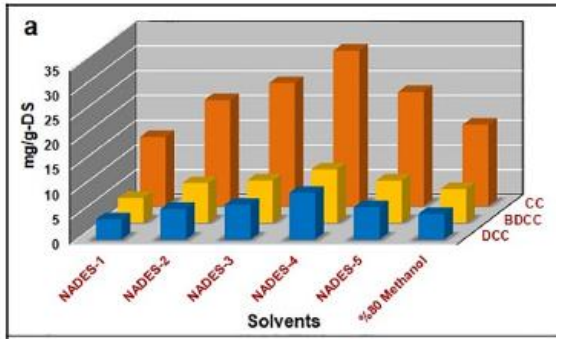
KEYWORDS: *pomace, anthocyanins, antioxidants, phenolics, blueberry*

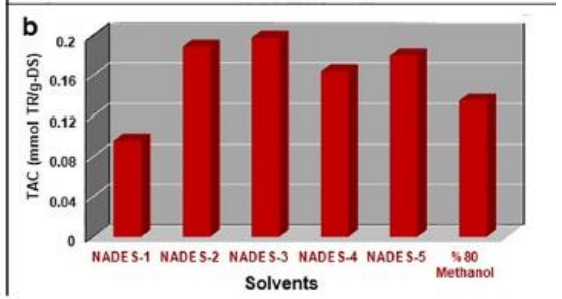


Q1









Volume 373PA, 30 March 2022

ISSN: 0308-8146

ELSEVIER

FOOD CHEMISTRY

Editor-in-Chief
P. Finglas

Contents lists available at ScienceDirect

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem

Q1

Optimization and modeling of microwave-assisted extraction of curcumin and antioxidant compounds from turmeric by using natural deep eutectic solvents

Khadija Doldolova [a], Mustafa Bener [b], Melisa Lalikoğlu [c], Yavuz Selim Aşçı [b], Refik Arat [d], Reşat Apak [a,*]

[a] Istanbul University-Cerrahpasa, Faculty of Engineering, Department of Chemistry, Avcılar 34320, Istanbul, Turkey
[b] Istanbul University, Faculty of Science, Department of Chemistry, Fatih 34126, Istanbul, Turkey
[c] Istanbul University-Cerrahpasa, Faculty of Engineering, Department of Chemical Engineering, Avcılar 34320, Istanbul, Turkey
[d] Istanbul Kultur University, Department of Civil Engineering, Bakirkoy 34156, Istanbul, Turkey



Food Chemistry 385 (2022) 132633

Contents lists available at ScienceDirect

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem

Volume 373PA, 30 March 2022

ISSN: 0308-8146

FOOD CHEMISTRY

Editor-in-Chief
P. Finglas

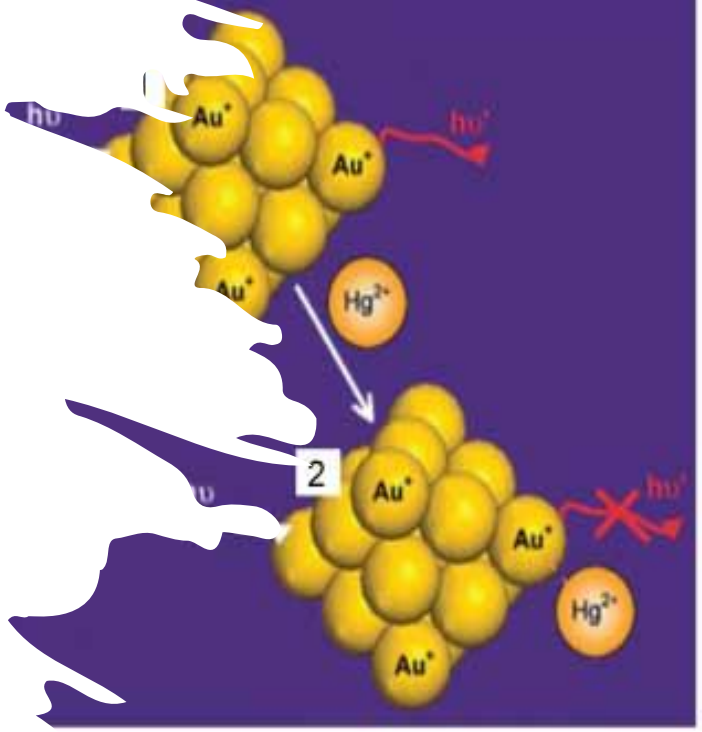
Q1

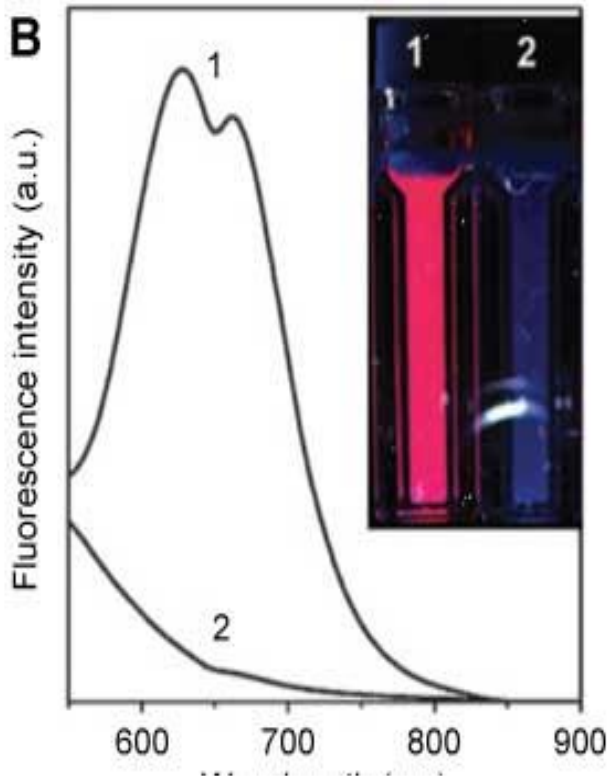
Microwave-assisted extraction of antioxidant compounds from by-products of Turkish hazelnut (*Corylus avellana* L.) using natural deep eutectic solvents: Modeling, optimization and phenolic characterization

Mustafa Bener [a,*], Furkan Burak Şen [b], Ayşe Nur Önem [b], Burcu Bekdeşer [b], Saliha Esin Çelik [b], Melisa Lalikoglu [c], Yavuz Selim Aşçı [a], Esra Capanoglu [d], Reşat Apak [b,*]

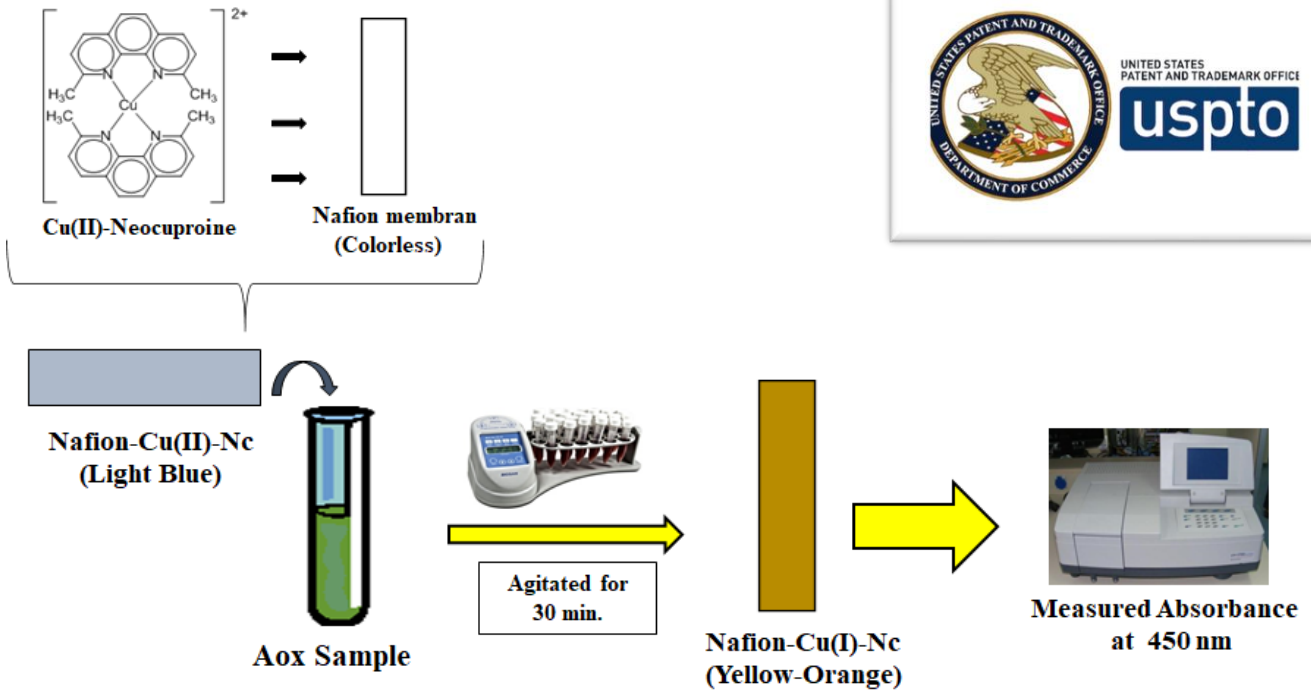
[a] *Istanbul University, Faculty of Science, Department of Chemistry, Fatih, 34126 Istanbul, Turkey*
[b] *Istanbul University-Cerrahpasa, Faculty of Engineering, Department of Chemistry, Avcilar, 34320 Istanbul, Turkey*
[c] *Istanbul University-Cerrahpasa, Faculty of Engineering, Department of Chemical Engineering, Avcilar, 34320 Istanbul, Turkey*
[d] *Istanbul Technical University, Faculty of Chemical and Metallurgical Engineering, Department of Food Engineering, Maslak, 34469 Istanbul, Turkey*

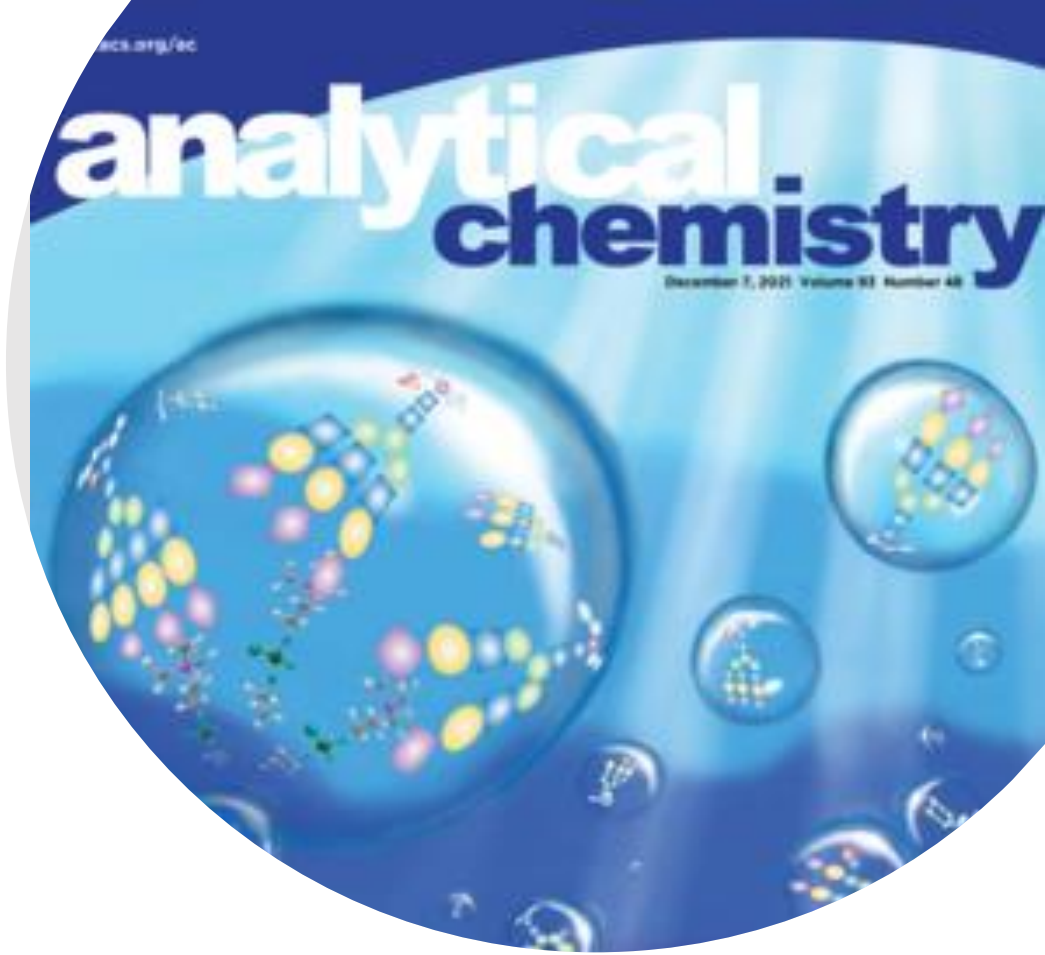
- **Antioksidanların tayini için sensör (optik sensörler ve nanosensörler) esaslı yöntemler geliştirilmesine odaklanılan çalışmalar.**











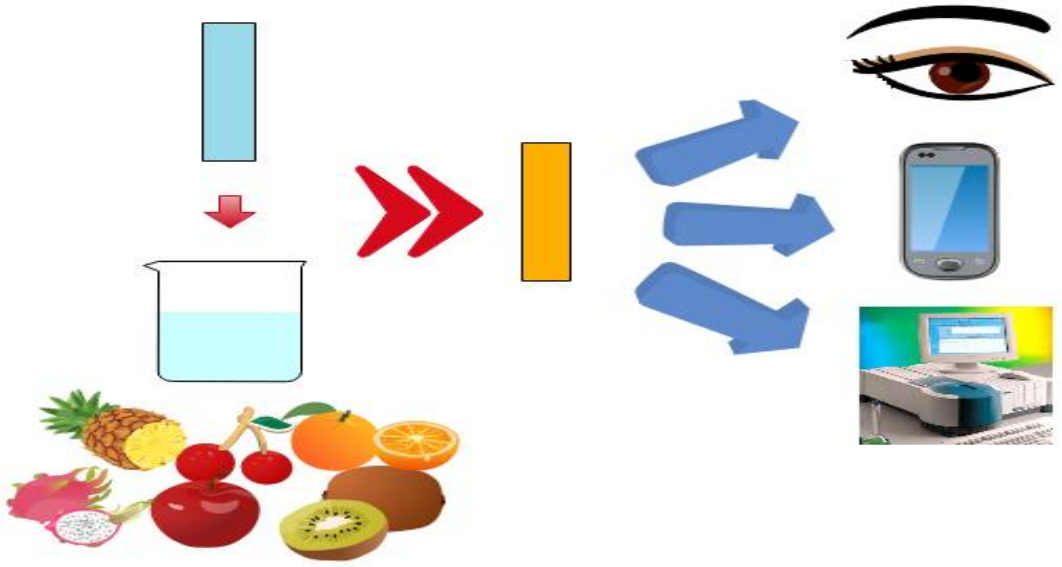
Anal. Chem. **2010**, *82*, 4252–4258

Development of a Low-Cost Optical Sensor for Cupric Reducing Antioxidant Capacity Measurement of Food Extracts

Q1

Mustafa Bener, Mustafa Özyürek, Kubilay Güçlü, and Reşat Apak*

Department of Chemistry, Faculty of Engineering, Istanbul University, Avcilar 34320, Istanbul, Turkey



TÜRK PATENT ENSTİTÜSÜ

SENSORS and ACTUATORS B Chemical

Sensors & Actuators: B. Chemical 273 (2018) 439–447

Contents lists available at ScienceDirect

Sensors and Actuators B: Chemical

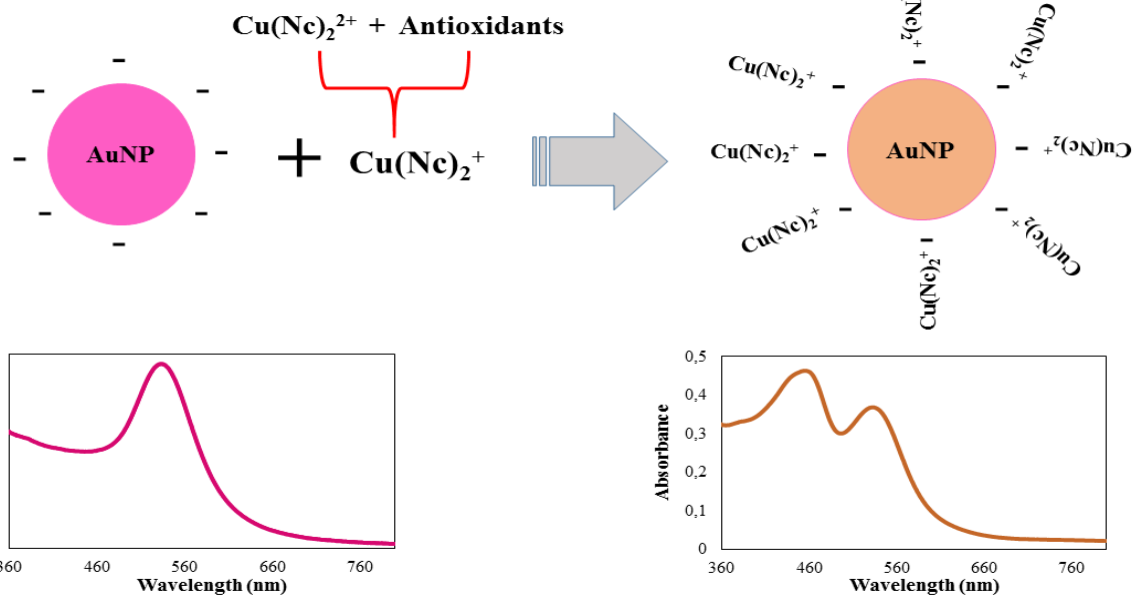
journal homepage: www.elsevier.com/locate/snb

Q1

Carrageenan-based colorimetric sensor for total antioxidant capacity measurement

Mustafa Bener[a], Furkan Burak Şen[a], Alper Kaşgöz[b], Reşat Apak[a,c,*]

[a] Department of Chemistry, Faculty of Engineering, Istanbul University, Avcılar 34320, Istanbul, Turkey
[b] Department of Polymer Engineering, Faculty of Engineering, Yalova University, Yalova, Turkey
[c] Turkish Academy of Sciences (TUBA), Piyade St. No: 27, Çankaya, Ankara, Turkey



Talanta 187 (2018) 148–155

Contents lists available at ScienceDirect

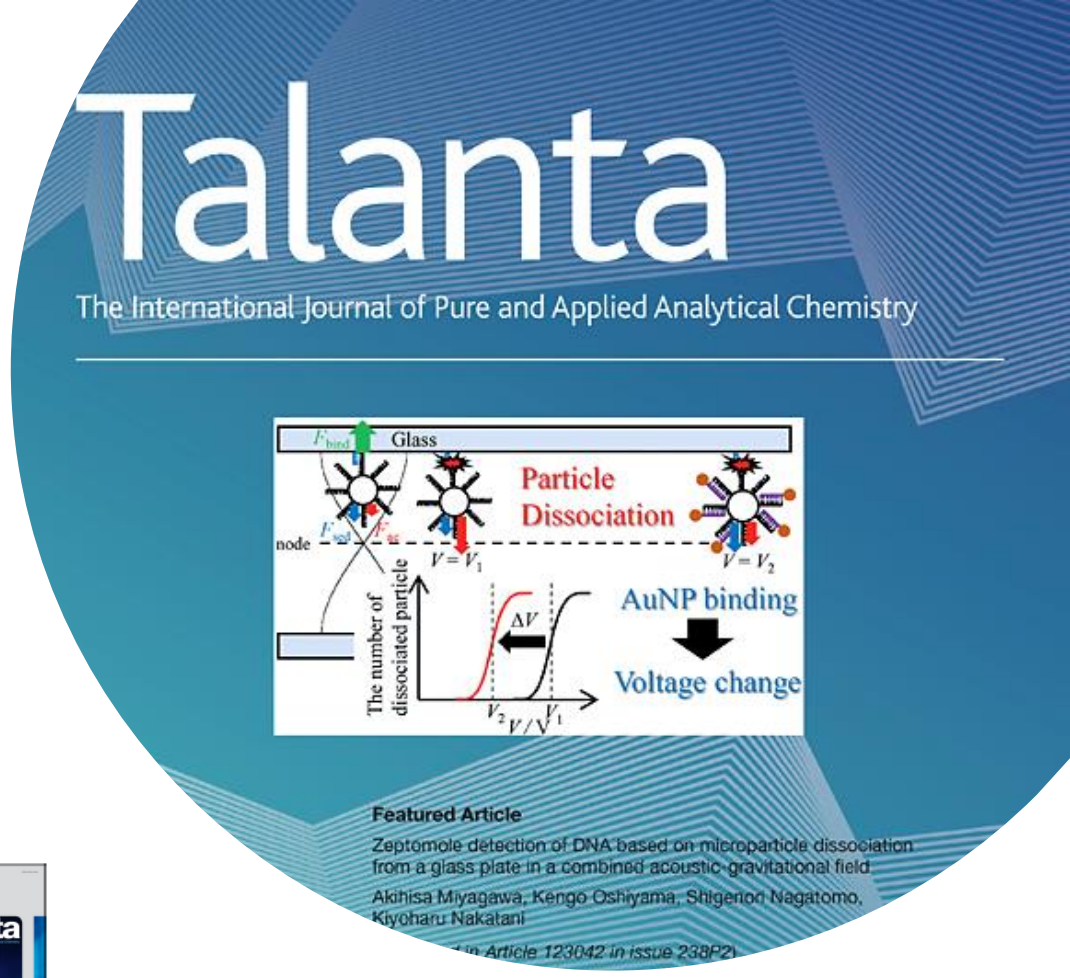
Talanta

journal homepage: www.elsevier.com/locate/talanta

Heparin-stabilized gold nanoparticles-based CUPRAC colorimetric sensor for antioxidant capacity measurement

Mustafa Bener[a], Furkan Burak Şen[a], Reşat Apak[a,b,*]

[a] Division of Analytical Chemistry, Department of Chemistry, Faculty of Engineering, Istanbul University, Avcilar, 34320 Istanbul, Turkey
[b] Turkish Academy of Sciences (TUBA), Piyade St. No: 27, Çankaya, Ankara, Turkey



Q1

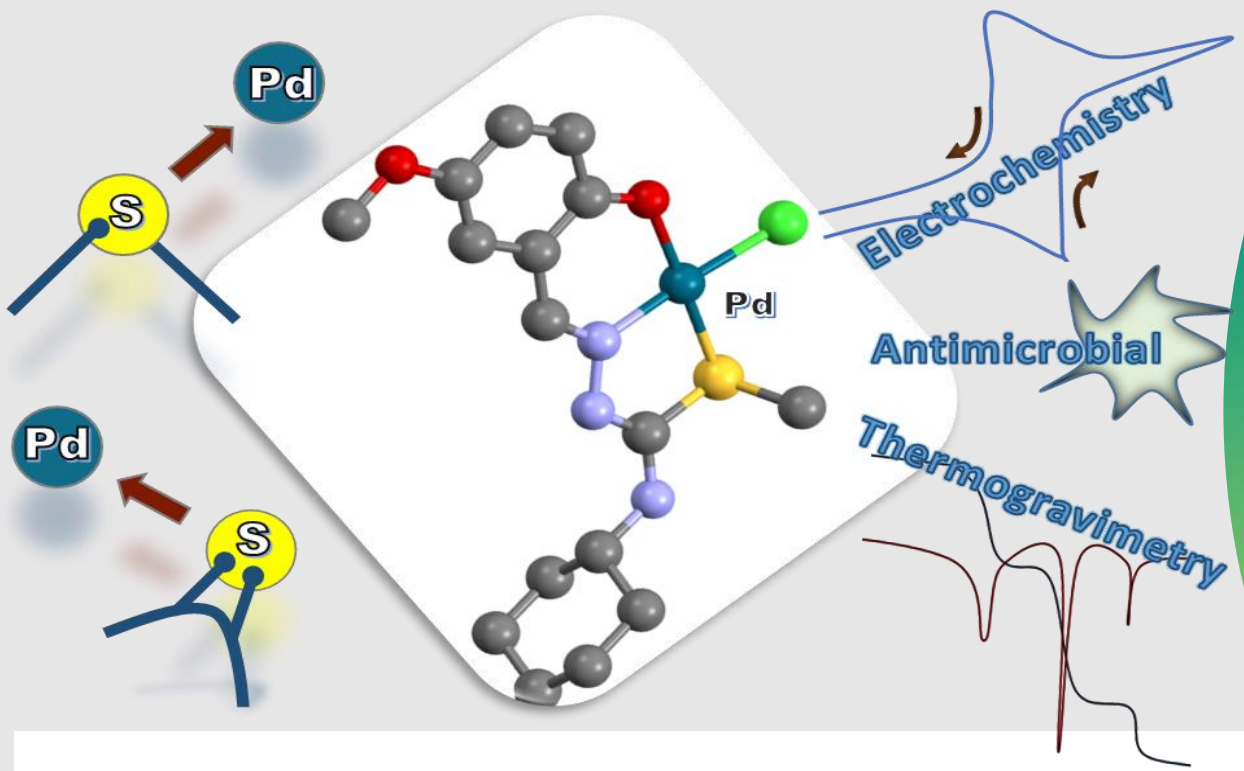
Anorganik Kimya Alanında Yapılan Çalışmalar

- ✓ Anorganik kimya periyodik çizelgeyi oluşturan bütün elementlerin fiziksel ve kimyasal özelliklerinin araştırılmasını kapsayan bir alt disiplin olup, diğer disiplinlerle yapılan ortak çalışmalarda büyük katkıları vardır.

- ✓ İlaç, tekstil, yakıt, boya gibi birçok endüstriyel alanda kullanılan binlerce anorganik malzemenin elde edilmesi ve özelliklerinin araştırılması bu disiplinin çalışma konularındandır.

- ✓ Birçok alanda aktivite gösteren organik bileşiklerin ve metal komplekslerinin tasarlanarak sentezlenmesi ve ilgili konularda çalışmalarının gerçekleştirilmesi çalışmaları yapılmaktadır.

- ✓ Sentezlenen yeni bileşiklerin özellikle biyolojik aktivite çalışmaları ve optik sensör özelliği gösterebilme potansiyelleri araştırılmaktadır.



Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy 237 (2020) 118358

Contents lists available at ScienceDirect

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy

journal homepage: www.elsevier.com/locate/saa

Palladium (II) complexes with thione and thioalkylated thiosemicarbazones: Electrochemical, antimicrobial and thermogravimetric investigations

Songül Eğlence-Bakır [a], Musa Şahin [a,*], Betül Zehra Salt [b], Elif Tüzün [c], Emel Mataracı Kara [d], Gülten Atun [c], Selva Çavuş [e], İrfan Kızılcıklı [b]

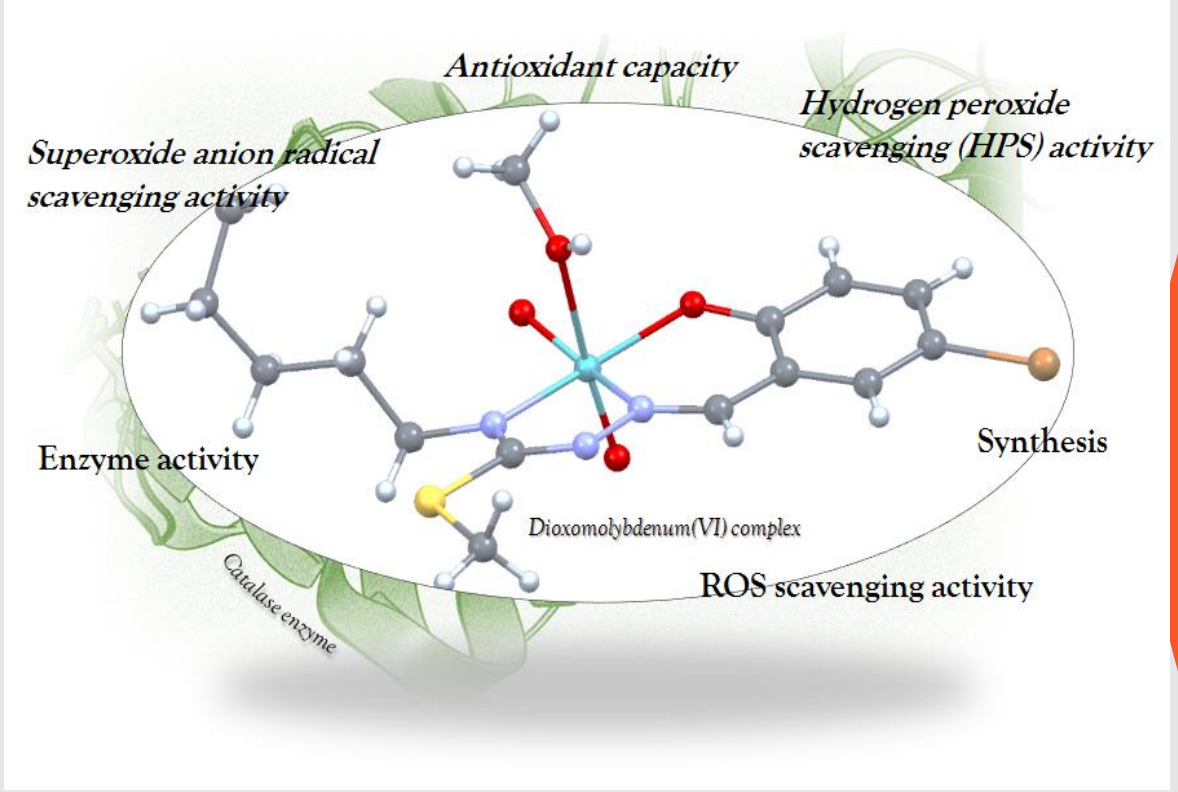
[a] Faculty of Science, Department of Chemistry, Division of Inorganic Chemistry, Istanbul University, Istanbul, Turkey
[b] Faculty of Engineering, Department of Chemistry, Division of Inorganic Chemistry, Istanbul University-Cerrahpaşa, Istanbul, Turkey
[c] Faculty of Engineering, Department of Chemistry, Division of Physical Chemistry, Istanbul University-Cerrahpaşa, Istanbul, Turkey
[d] Faculty of Pharmacy, Department of Pharmaceutical Microbiology, Istanbul University, Istanbul, Turkey
[e] Faculty of Engineering, Department of Chemical Engineering, Istanbul University-Cerrahpaşa, Istanbul, Turkey

SPECTROCHIMICA ACTA
PART A: MOLECULAR AND BIOMOLECULAR SPECTROSCOPY

of instrument operation
routine performance
lures for handheld
neters used at different
tory network
im, M. Jinnah,



Q1



Inorganica Chimica Acta 469 (2018) 495–502

Contents lists available at ScienceDirect

Inorganica Chimica Acta

journal homepage: www.elsevier.com/locate/ica

Research paper

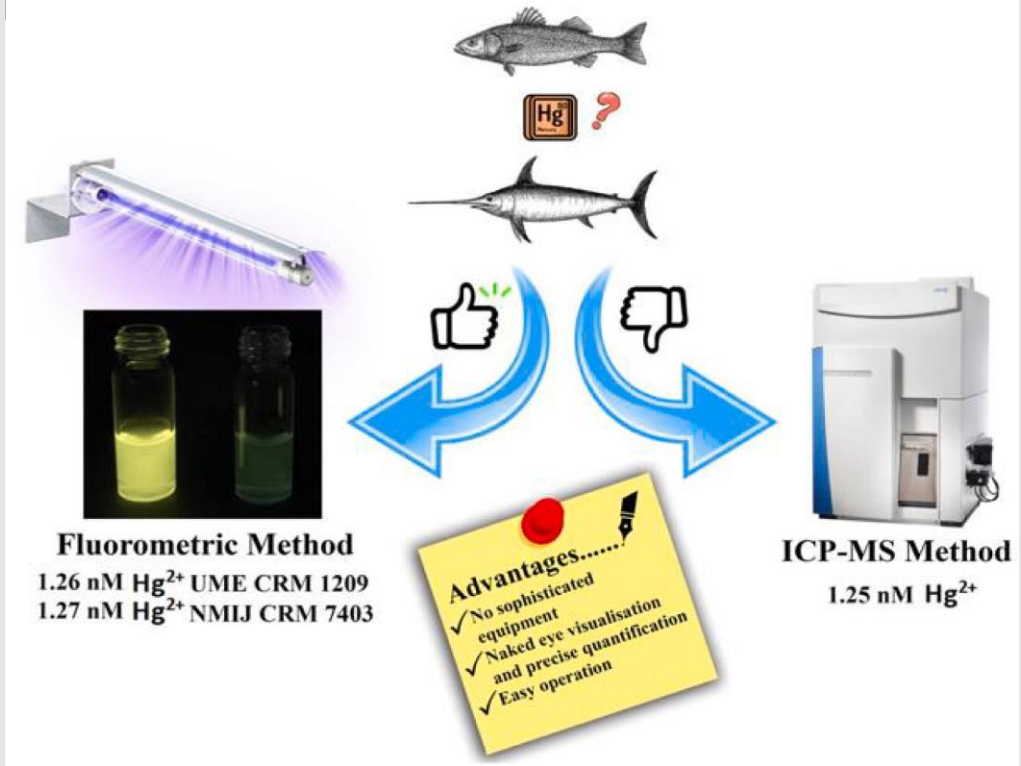
Dioxomolybdenum(VI) complexes of S-methyl-5-bromosalicylidene-N-alkyl substituted thiosemicarbazones: Synthesis, catalase inhibition and antioxidant activities

Songül Eğlence [a], Musa Şahin [a,*], Mustafa Özyürek [b], Reşat Apak [b], Bahri Ülküseven [a]

[a] Department of Chemistry, Inorganic Chemistry Division, Istanbul University, 34320 Avcilar, Istanbul, Turkey
[b] Department of Chemistry, Analytical Chemistry Division, Istanbul University, 34320 Avcilar, Istanbul, Turkey



Q2



Food Chemistry 371 (2022) 131309

Contents lists available at ScienceDirect

Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem

Rapid, ultrasensitive, highly selective detection of toxic Hg(II) ions in seabass, swordfish and water samples

Eda Erdemir [a,b,1], Garen Suna [a,1], Simay Gunduz [a], Musa Şahin [b], Songül Eğlence-Bakır [b,*], Erman Karakuş [a,*]

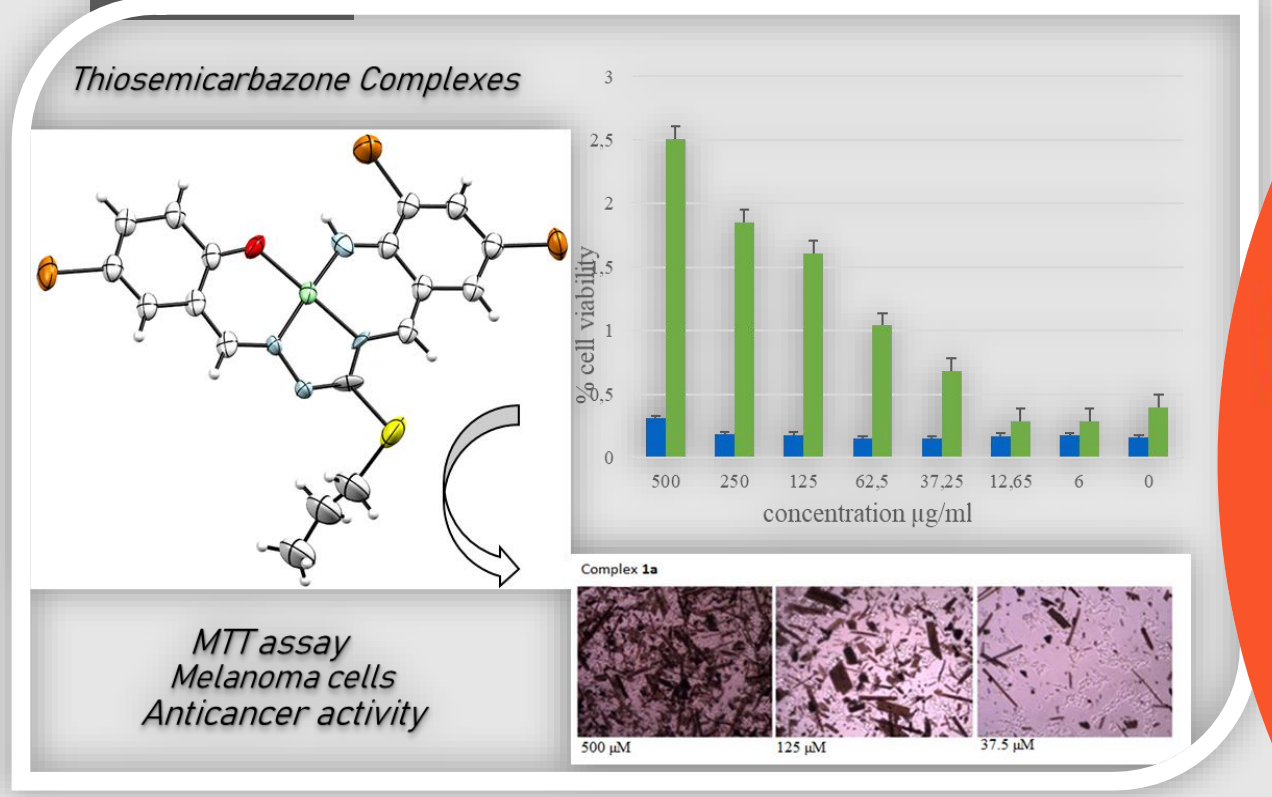
[a] Organic Chemistry Laboratory, Chemistry Group, National Metrology Institute, (TUBITAK UME), 41470 Gebze, Kocaeli, Turkey
[b] Faculty of Science, Department of Chemistry, Division of Inorganic Chemistry, Istanbul University, Istanbul, Turkey

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FOOD CHEMISTRY

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Q1



Inorganica Chimica Acta 502 (2020) 119347

Contents lists available at ScienceDirect

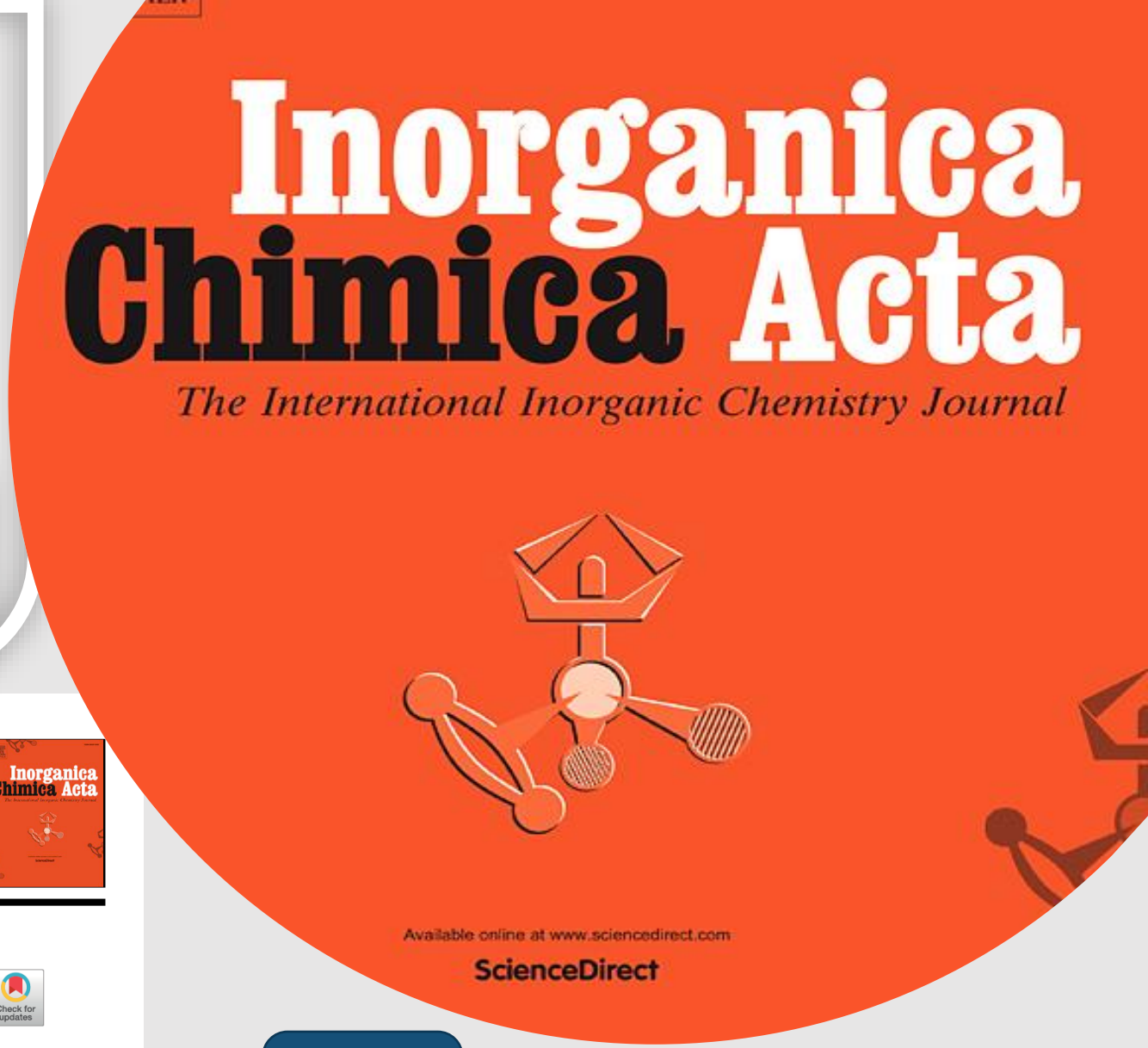
Inorganica Chimica Acta

journal homepage: www.elsevier.com/locate/ica

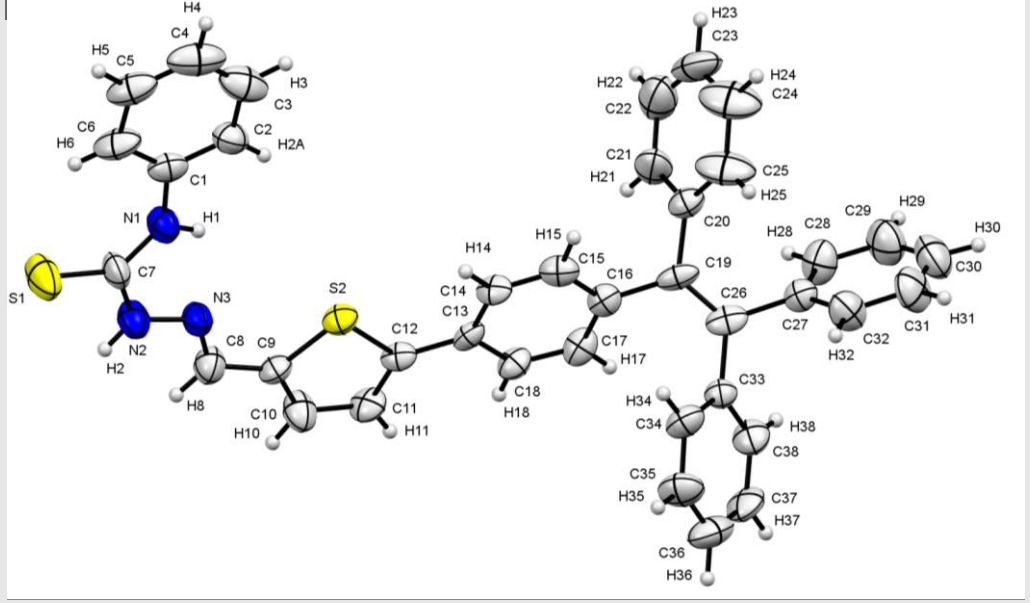
Effective copper(II) and nickel(II) complexes with N_3O and ON_3 thiosemicarbazidato ligands. Synthesis, structural analysis and *in vitro* cytotoxity on melanoma B16F10 cells

Musa Şahin[a,*], Songül Eğlence-Bakır[a], Merve Alpay[b], Selin Alpay[c], Recep Özmerdivenli[d], Bahri Ülküseven[c]

[a] Faculty of Science, Department of Chemistry, Istanbul University, Istanbul, Turkey
[b] MD Anderson Cancer Center, Department of Cancer Systems Imaging, Houston, USA
[c] Faculty of Engineering, Department of Chemistry, Istanbul University-Cerrahpaşa, Istanbul, Turkey



Q2



Analytica Chimica Acta 1218 (2022) 340029

Contents lists available at ScienceDirect

Analytica Chimica Acta

journal homepage: www.elsevier.com/locate/aca

Tetraphenylethylene–thiosemicarbazone based ultrafast, highly sensitive detection of hypochlorite in aqueous environments and dairy products

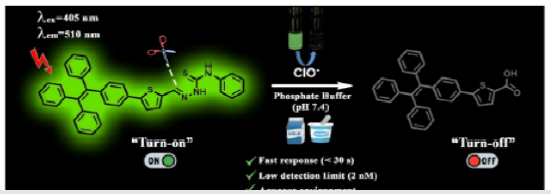
Eda Erdemir [a,b,1], Garen Suna [a,1], Simay Gunduz [a], Musa Şahin [b], Songül Eğlence-Bakır [b,**], Erman Karakuş [a,*]

[a] Organic Chemistry Laboratory, Chemistry Group, The Scientific & Technological Research Council of Turkey National Metrology Institute, (TUBITAK UME), Gebze, 41470 Kocaeli, Turkey
[b] Department of Chemistry, Faculty of Science, Istanbul University, 34134 Istanbul, Turkey

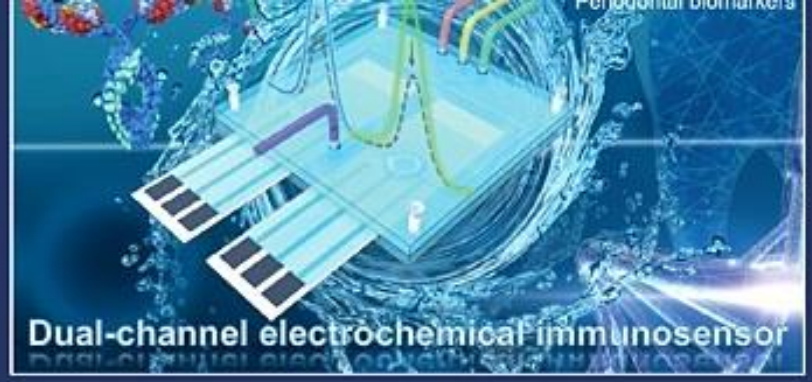
HIGHLIGHTS

- Novel tetraphenylethylene-thiosemicarbazone based probe for the selective detection of hypochlorite (ClO^-).
- Detection of ClO^- in nearly 100% aqueous media.
- Ultrafast response (<30 s) with high sensitivity (LOD = 2.0 nM).
- Detection of ClO^- in various water samples and disinfectant.
- Offers a promising method for monitoring ClO^- contamination in dairy

GRAPHICAL ABSTRACT





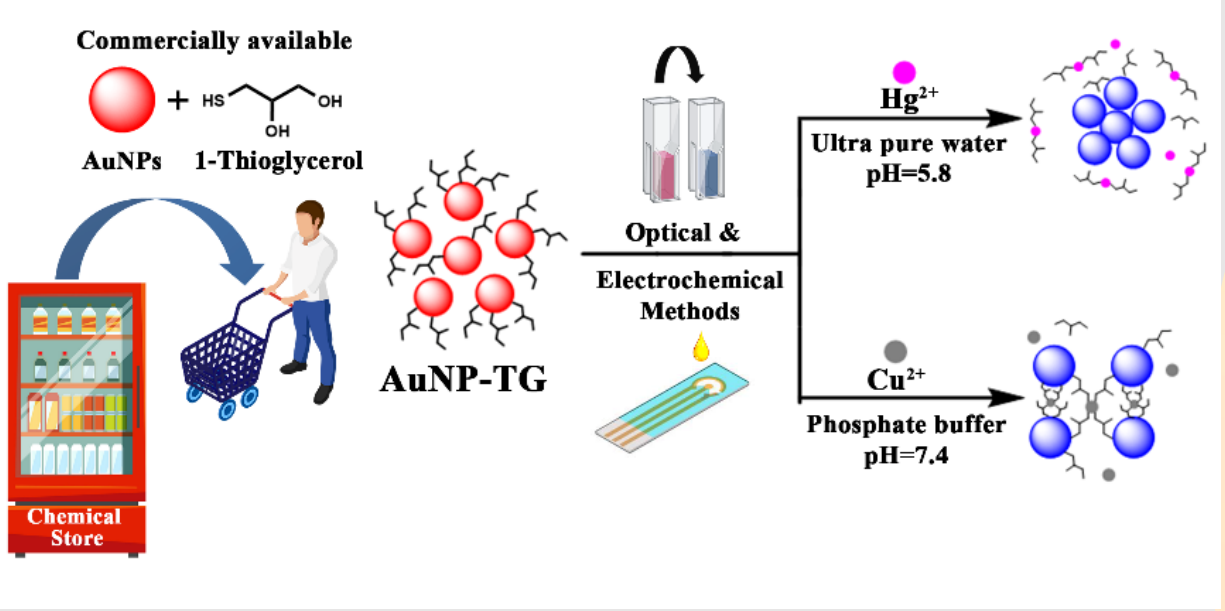


Analytica Chimica Acta

AN INTERNATIONAL JOURNAL DEVOTED TO ALL BRANCHES OF ANALYTICAL CHIMISTRY

Integrated dual-channel electrochemical immunosensor for early diagnosis and monitoring of periodontitis by detecting multiple biomarkers in saliva
W. Zhang, J. Du, K. Wang, Y. Li, C. Chen, L. Yang, Z. Kan, B. Dong, L. Wang and L. Xu

Q1



Sensors & Actuators: B. Chemical 382 (2023) 133487

Contents lists available at ScienceDirect

Sensors and Actuators: B. Chemical

journal homepage: www.elsevier.com/locate/snb

Smartphone-assisted dual-channel discriminative detection of Hg(II) and Cu(II) ions with a simple, unique, readily available probe

Eda Erdemir [a,b,1], Garen Suna [a,1], Lokman Liv [c], Songül Eğlence-Bakır [b], Musa Şahin [b], Erman Karakuş [a,*]

[a] Organic Chemistry Laboratory, Chemistry Group, The Scientific & Technological Research Council of Turkey, National Metrology Institute, (TUBITAK UME), 41470 Gebze, Kocaeli, Turkey
[b] Department of Chemistry, Faculty of Science, Istanbul University, 34134 Istanbul, Turkey
[c] Electrochemistry Laboratory, Chemistry Group, The Scientific and Technological Research Council of Turkey, National Metrology Institute, (TUBITAK UME), 41470 Gebze, Kocaeli, Turkey

ARTICLE INFO

Keywords:
Gold nanoparticles
Toxic heavy metal ions
Environmental pollution
Multi-channel probe
Smartphone application

ABSTRACT

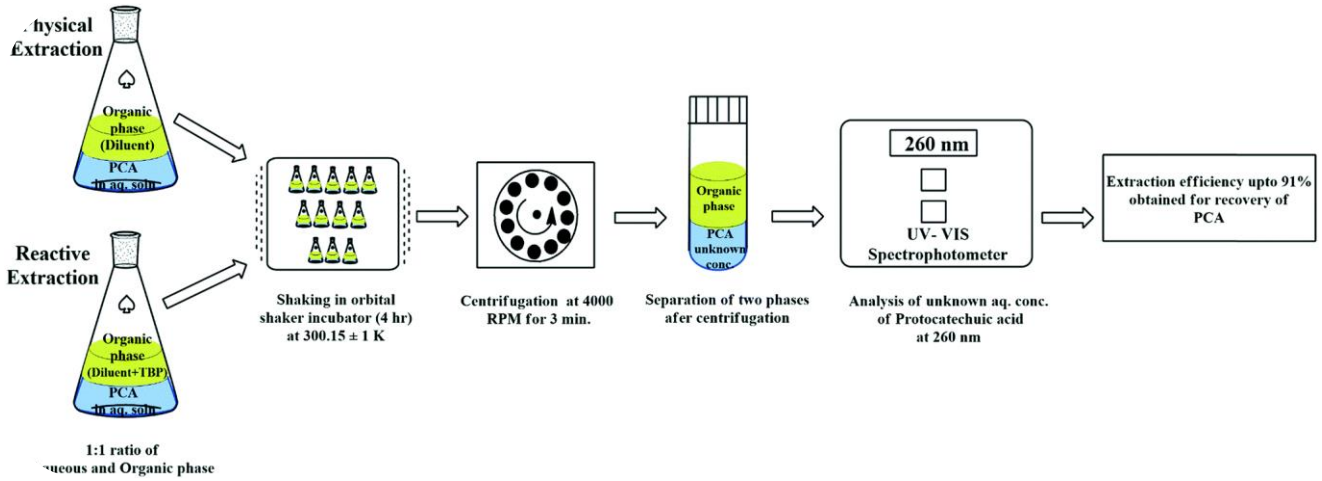
Heavy metal ions are well-known atmospheric and environmental pollutants and cause long-term damage to humans. Mercury is one of the most toxic and hazardous one that induce critical motor disorders and a variety of diseases. Likewise, excess copper can lead to Alzheimer's and Parkinson's disease, as well as various other health conditions. Therefore, selective and sensitive methods for determining and visualizing mercury and copper remain necessary. In our study, we developed the first-ever optical-electrochemical method of discriminatively detecting Hg^{2+} and Cu^{2+} ions using 1-thioglycerol (TG)-modified gold nanoparticles (AuNPs) and by altering the solution's medium. Adding Hg^{2+} ions to AuNP–TG in ultrapure water changed the original burgundy color blue, the initial absorbance value (i.e., 520 nm) decreased, and a new absorbance peak appeared at λ_{max} = 670 nm. In a phosphate-buffered solution, Cu^{2+} ions issued a similar response. However, neither Hg^{2+} nor Cu^{2+} ions

SENSORS and ACTUATORS B Chemical

Q1

Fizikokimya Alanında Yapılan Çalışmalar

- ✓ Derin ötektik çözücüler başta olmak üzere yeni nesil çözücülerin geliştirilmesi
- ✓ Alternatif prosesler ve yöntemler kullanılarak endüstriyel üretim yöntemlerinin iyileştirilmesi.
- ✓ Polimer, metal ve kompozit kökenli özgün malzemelerin sentezi.
- ✓ Ayırma ve saflaştırma işlemlerinin geliştirilmesi ve optimizasyonu.



Chemical Engineering Journal 155 (2009) 784–788

Contents lists available at ScienceDirect

Chemical Engineering Journal

journal homepage: www.elsevier.com/locate/cej

Extraction equilibria of propionic acid from aqueous solutions by Amberlite LA-2 in diluent solvents

Yavuz Selim Aşçı*, İsmail İnci

İstanbul University, Engineering Faculty, Chemical Engineering Department, 34320, İstanbul, Turkey

ARTICLE INFO

Article history:
Received 18 December 2008
Received in revised form 13 April 2009
Accepted 17 September 2009

Keywords:
Extraction
Propionic acid
Amberlite LA-2

ABSTRACT

Amberlite LA-2 (a secondary amine) was studied for its ability to extract propionic acid at different amine concentrations. The extraction of propionic acid by Amberlite LA-2 dissolved in seven single solvents (cyclohexane, 2-octanone, toluene, methyl isobutyl ketone, isooctane, haxane and 1-octanol) was investigated under various amine concentrations at 298.15 K. Using Bizek's approach, two acids: amine *complexes*, $(HO):(R_2N)$ and $(HO):(R_2N)_2$, are assumed to exist in the organic phase in case of proton-donating diluents, while the complexes $(HO):(R_2N)$ and $(HO)_2:(R_2N)_3$ are suggested in the case of non-proton-donating diluents. Important data for design of separation units have been obtained as a result of batch experiments. These data are distribution coefficients (D), loading factors (Z), extraction efficiency (E) and overall extraction constants (K_{11}, K_{12}, K_{23}). The maximum removal of glycolic acid is 94.68% with MIBK and 0.93 mol L^{-1} initial concentration of Amberlite LA-2.

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Q1
IF: 13.273

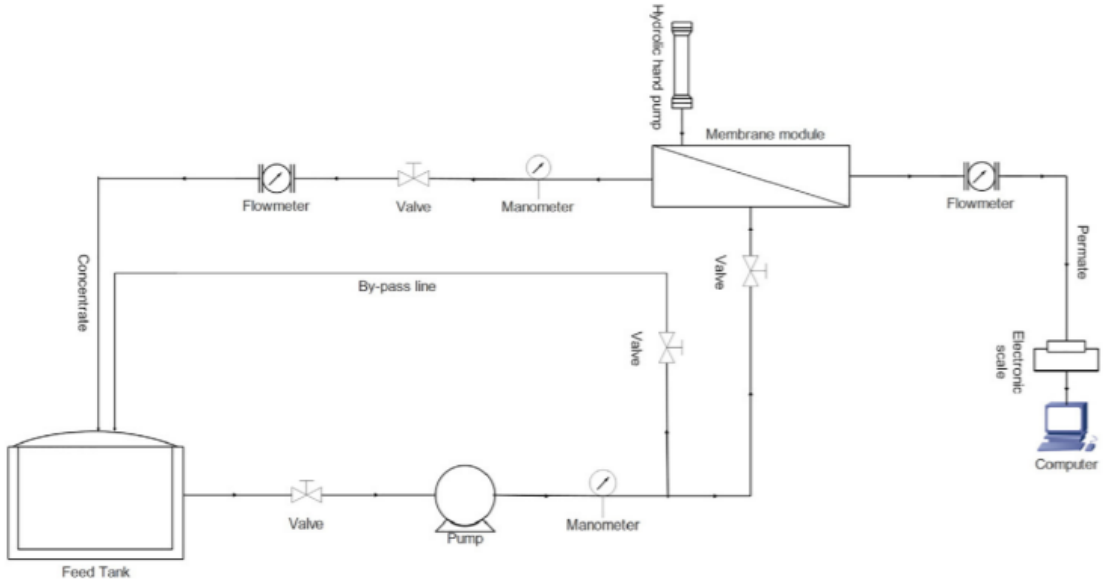


Fig. 1. Schematic representation of membrane unit.

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Investigation of the separation of carboxylic acids from aqueous solutions using a pilot scale membrane unit

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ABSTRACT

Separation of carboxylic acids from aqueous solutions using synthetic membranes has been investigated within the context of this study. Formic, glycolic, malic, and citric acid aqueous solutions were prepared in the experiments as mixtures to be separated. Nanofiltration (NF) and reverse osmosis (RO) membranes were used for the separation of acid solutions. The experiments were carried out on a pilot scale membrane unit allowing the use of membranes with a surface area of 140 cm^2. Experiments were performed by using different initial acid concentrations (5–15% w.) at 10, 20, 30 bar and 20 °C. Thus, the effects of pressure, the type of membrane and acids were analyzed on the separation performance by using single acid solutions, and model equations were formed with the help of response surface methodology (RSM) in the case of citric acid, which has the highest rejection ratio. As a result of the experimental studies carried out, very high rejection values (max. 98.36%) were obtained and it was seen that the carboxylic acids were successfully separated from the aqueous media.

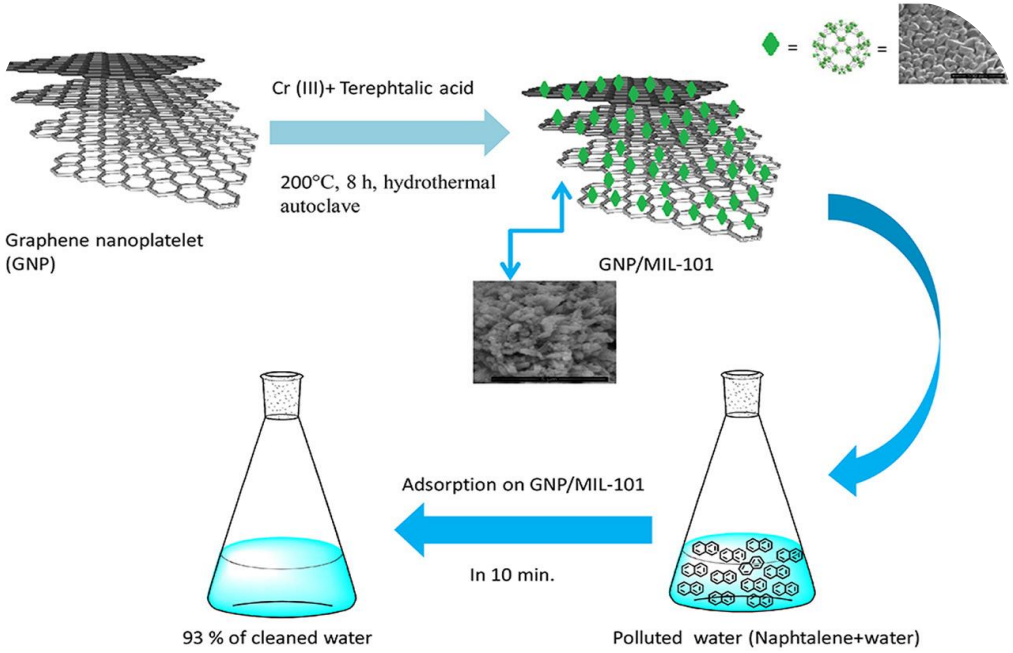
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journal of MOLECULAR LIQUIDS

Structure, Interactions and Dynamics of Simple, Molecular, Ionic and Complex Liquids

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Rapid adsorptive removal of naphthalene from water using graphene nanoplatelet/MIL-101 (Cr) nanocomposite

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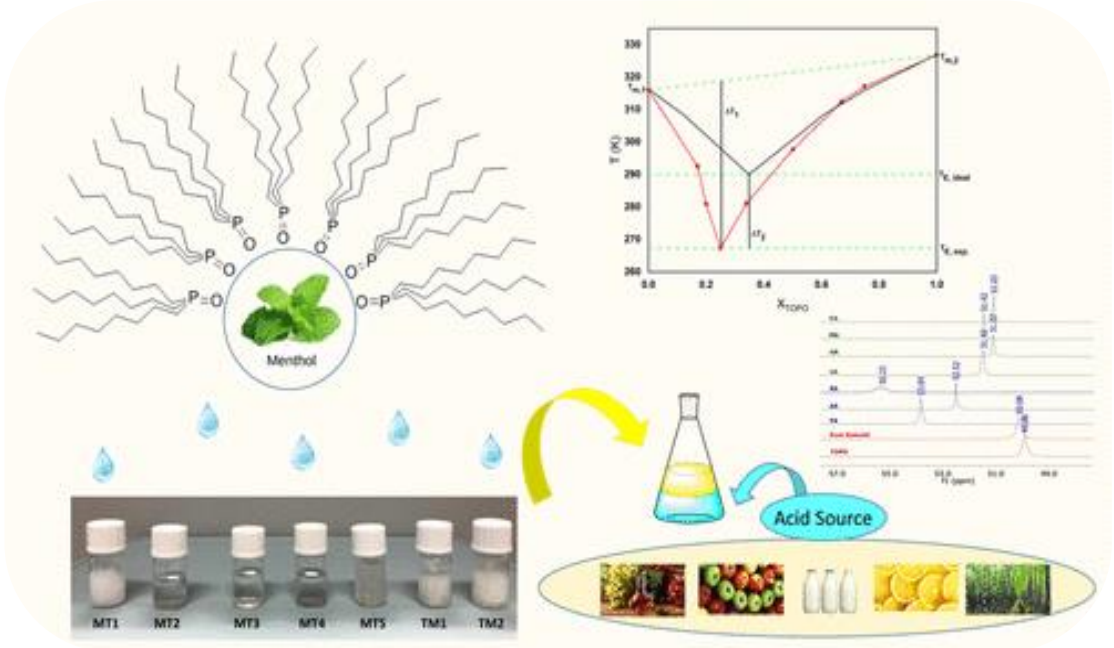
ABSTRACT

The study of the adsorption equilibria of naphthalene onto graphene nanoplatelet supported MIL-101 composite material (GNP/MIL-101) has been conducted. In the experimental context of this study, firstly GNP/MIL-101 was synthesized by applying hydrothermal method and characterized via FTIR, XRD, SEM, TEM and surface area analyses. The effects of GNP/MIL-101 amount, temperature and initial naphthalene concentration on the adsorption process have been investigated. Results show that the maximum removal of naphthalene was obtained as about 93% by 0.075 g GNP/MIL-101 at 298 K. The isothermal data were fitted to linear and non-linear Langmuir, Freundlich, and Temkin adsorption isotherm models and the kinetic data were fitted to Elovich and other kinetic models. Adsorption depended on initial naphthalene concentration at investigated various temperatures (298, 308, 318 K) significantly. The temperature dependence of adsorption process is associated with the changes in several thermodynamic parameters such as standard free energy (ΔG°), enthalpy (ΔH°) and entropy (ΔS°).

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Q1
IF: 5.316





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Article

Development of New Hydrophobic Deep Eutectic Solvents Based on Trioctylphosphine Oxide for Reactive Extraction of Carboxylic Acids

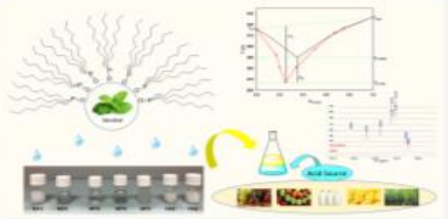
Yavuz Selim Aşçı* and Melisa Lalikoglu

Cite This: *Ind. Eng. Chem. Res.* 2021, 60, 1356−1365

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ABSTRACT: Separation of carboxylic acids from their aqueous solutions by reactive extraction using a newly developed deep eutectic solvent (DES) was investigated. DESs were prepared using trioctylphosphine oxide (TOPO, T) and menthol (M) binary mixtures prepared in different mole ratios. ^{1}H NMR (nuclear magnetic resonance spectroscopy), ^{31}P NMR, and differential scanning calorimetry (DSC) analyses were performed to characterize the solvents that were obtained. The physical properties of the DES formed were determined by measuring density, viscosity, and refractive index values. Extraction was carried out using the DESs with organic acids (formic, acetic, propionic, glycolic, lactic, malic, and citric acid) containing different numbers of hydroxyl and carboxyl groups. Extraction efficiency (E %) and distribution coefficient (D) values were calculated to evaluate the obtained results. Response surface methodology was used to investigate the effects of the experimental conditions on reactive extraction yield and to obtain model equations of the acids.



Q2
IF: 3.764

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FOOD CHEMISTRY

Editor-in-Chief
P. Finglas

Table 1
Compositions and solvent code for the studied NADESs.

Solvent Code	Constituents	Molar Ratio
NADES-1[1]	Fructose:choline chloride:water	2:5:5
NADES-2[2]	Sucrose:choline chloride:water	1:4:4
NADES-3	Fructose:lactic acid:water	1:5:5
NADES-4	Sucrose:lactic acid:water	1:5:7
NADES-5	Lactic acid:choline chloride:water	1:1:2

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Food Chemistry

journal homepage: www.elsevier.com/locate/foodchem

Optimization and modeling of microwave-assisted extraction of curcumin and antioxidant compounds from turmeric by using natural deep eutectic solvents

Khadija Doldolova [a], Mustafa Bener [b], Melisa Lalikoğlu [c], Yavuz Selim Aşçı [b], Refik Arat [d], Reşat Apak [a,*]

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[b] Istanbul University, Faculty of Science, Department of Chemistry, Fatih 34126, Istanbul, Turkey
[c] Istanbul University-Cerrahpaşa, Faculty of Engineering, Department of Chemical Engineering, Avcılar 34320, Istanbul, Turkey
[d] Istanbul Kultur University, Department of Civil Engineering, Bakirkoy 34156, Istanbul, Turkey

ARTICLE INFO

Keywords:
NADES
Turmeric
Antioxidants
Curcumin
Microwave assisted extraction

ABSTRACT

Natural deep eutectic solvents (NADES) have recently come to the fore as new green solvents for foods, cosmetics and pharmaceuticals due to their unique solvation power and low toxicity. Turmeric extracts were prepared using the microwave assisted extraction method (MAE) using five NADES containing binary combinations of choline chloride, lactic acid, fructose, and sucrose. The MAE method was optimized and modeled by using response surface methodology to obtain maximum total antioxidant capacity (TAC) and curcumin contents (CC) in extracts for each NADES. All NADES extracts, except NADES-1 containing fructose and cholin chloride, exhibited higher TAC and CC than those in 80% methanol:water which was the preferred solvent in literature. NADES solvents did not interfere with subsequent antioxidant capacity measurements using the CUPRAC method. The proposed MAE is a potentially efficient and sustainable procedure in pharmaceutical and food industries for the extraction of antioxidants and curcumin from turmeric.

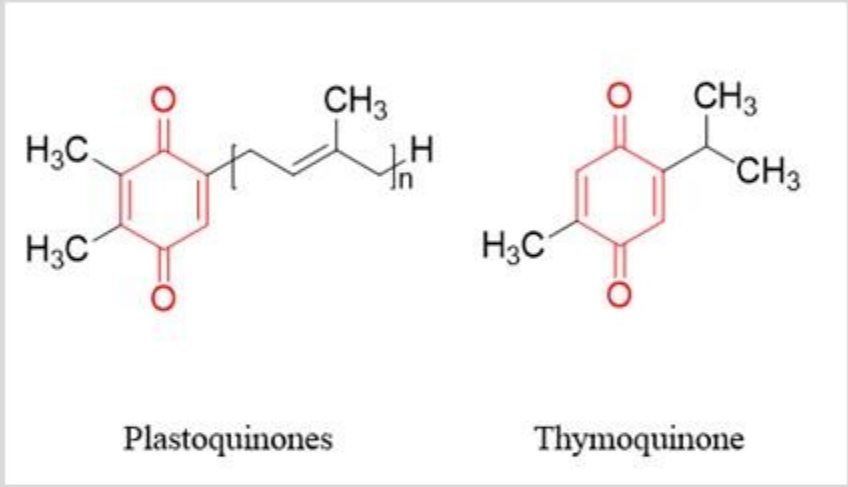
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IF: 7.514

Organik Kimya Alanında Yapılan Çalışmalar

- ✓ Doğal ürün temelli ve Tasarlanmış molekül temelli tasarım ile faydalı yeni sentetik moleküllerin geliştirilmektedir.
- ✓ Gelecek vaat eden biyolojik özelliklere sahip doğal ve sentetik bir takım moleküllerin tasarlanması, sentezlenmesi ve preklinik çalışmaları yürütülmektedir.
- ✓ Tasarlanan ve sentezlenen moleküllerin birçok çalışması Amerika, Avrupa ve Asya'daki araştırmacılarla olan aktif işbirlikler ile sürdürülmektedir.

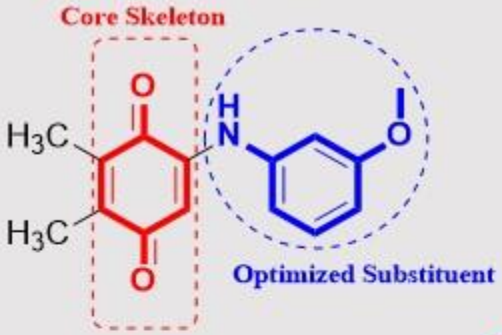
A) DOĞAL ÜRÜN TEMELLİ TASARIM

Nigella Sativa L. familyasında ekstrakte edilen çörek otu esansiyel yağının ana aktif bileşeni olan Timokinon, inflamatuar hastalıklara ve kansere **karşı umut verici etkiler gösterdiği kanıtlanmıştır. Özellikle kanserin ilerlemesinde anahtar olan sinyal yollarını modüle eder ve toksik yan etkilerini azaltırken klinik ilaçların antikanser potansiyelini arttırmaktadır.***





*Schneider-Stock, R., I. H. Fakhoury, A. M. Zaki, C. O. El-Baba, and H. U. Gali-Muhtasib. "Thymoquinone: Fifty Years of Success in the Battle against Cancer Models." Drug Discovery Today 19, no. 1 (Jan 2014): 18-30.



	Good cytotoxic activity (IC_{50})		Good selectivity (SI)
PQ2	6.40±1.73 (K562)	7.72±1.49 (Jurkat)	46.88
Imatinib	7.47±2.22 (K562)	9.49±2.46 (Jurkat)	5.33

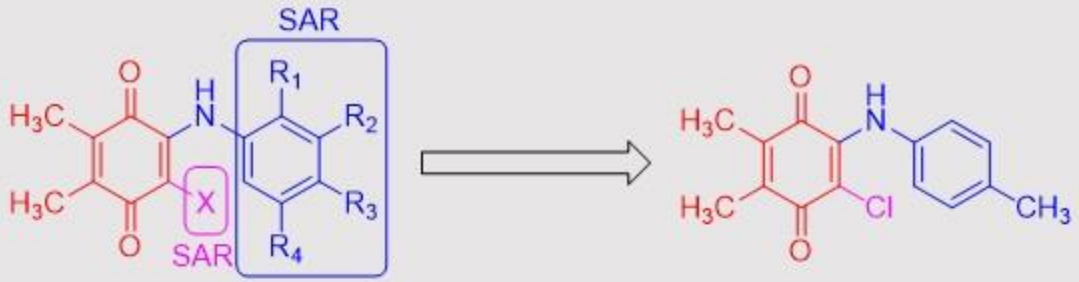
PQ2 vs Imatinib





Q1

Bayrak, N., H. Yildirim, M. Yildiz, M. O. Radwan, M. Otsuka, M. Fujita, A. F. Tuyun, and H. I. Ciftci. "Design, Synthesis, and Biological Activity of Plastoquinone Analogs as a New Class of Anticancer Agents" Bioorganic Chemistry 92 (Nov 2019).



X = H, Cl

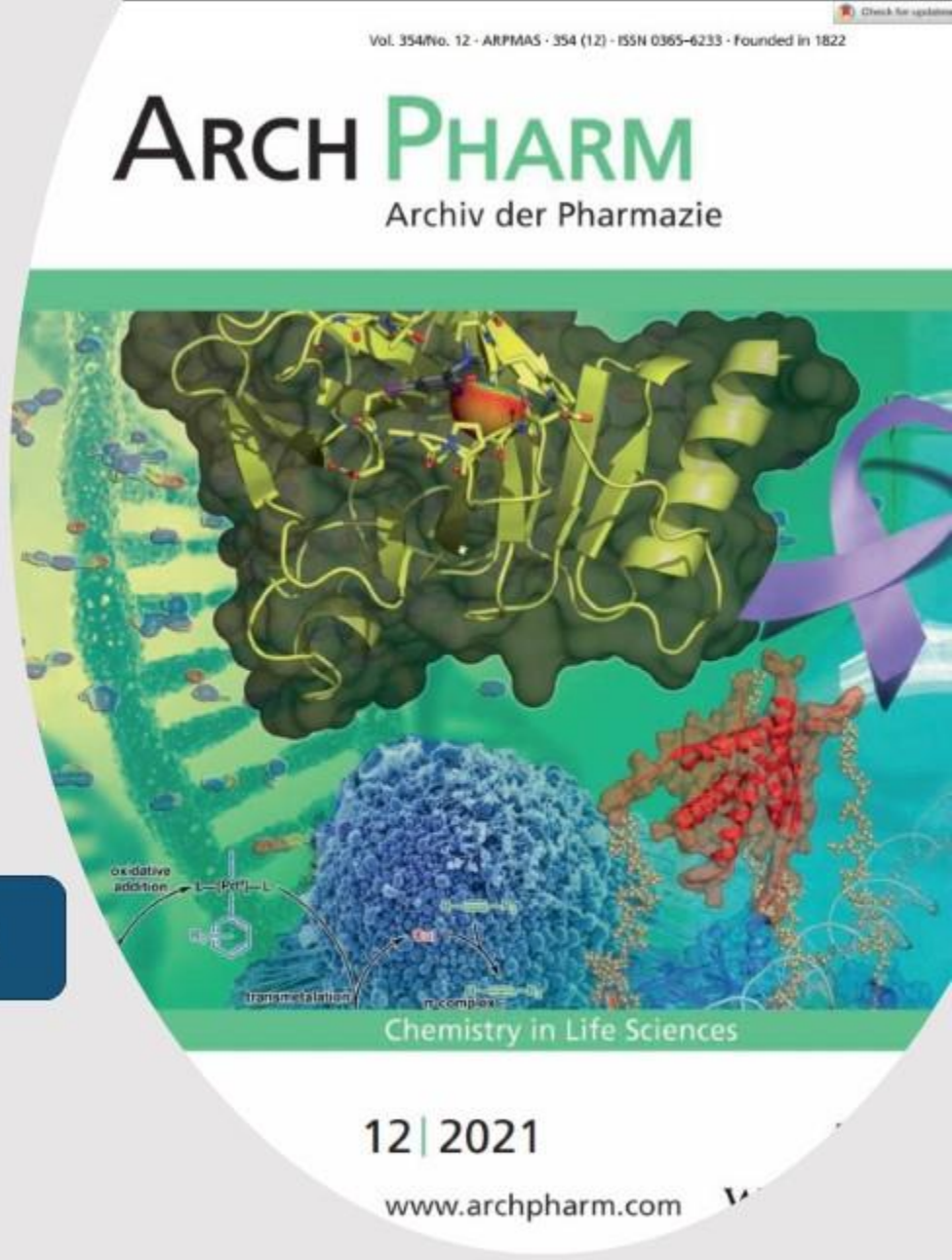
PQ15
Good cytotoxic activity and selectivity

IC_{50} values

PQ15	vs	Imatinib
0.76±0.04 (K562)		5.58±1.83 (K562)
2.34±0.88 (Jurkat)		9.65±2.17 (Jurkat)
5.09±1.11 (MT-2)		20.75±1.55 (MT-2)
10.05 (SI)		6.08 (SI)

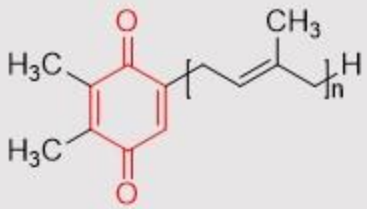
PQ15 vs Imatinib





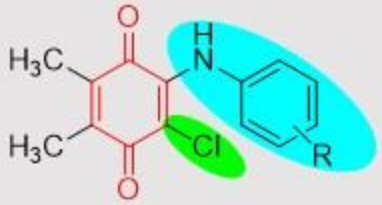
Q2

Ciftci, H. I., N. Bayrak, H. Yildirim, M. Yildiz, M. O. Radwan, M. Otsuka, M. Fujita, and A. F. Tuyun. "Discovery and Structure-Activity Relationship of Plastoquinone Analogs as Anticancer Agents against Chronic Myelogenous Leukemia Cells" Archiv Der Pharmazie 352, no. 12 (Dec 2019). https://dx.doi.org/ARTN e1900170



Plastoquinones

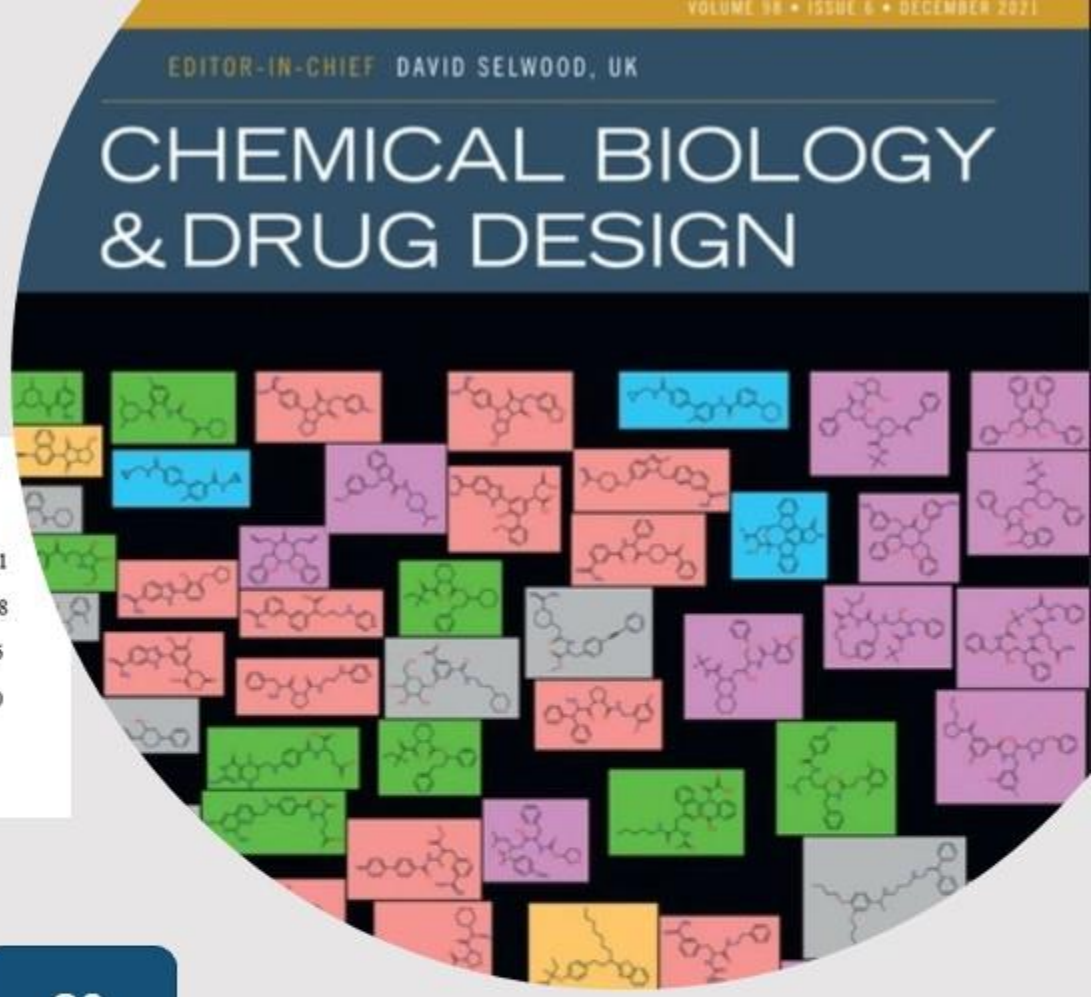
Modifications



R = **ABQ3**: 4-OCH_3
ABQ11: 2,5-OCH_3
ABQ12: 3,4-OCH_3

	Cell Lines (IC_{50})			SI
	K562	Jurkat	MT-2	
ABQ3	0.82±0.07	1.51±0.29	5.41±0.95	10.21
ABQ11	0.28±0.03	0.92±0.08	2.50±0.29	15.78
ABQ12	0.98±0.22	1.99±0.22	5.75±0.81	8.66
Imatinib	6.02±0.92	8.65±1.35	19.30±3.41	5.90

17 PQ analogs screened using MTT assay



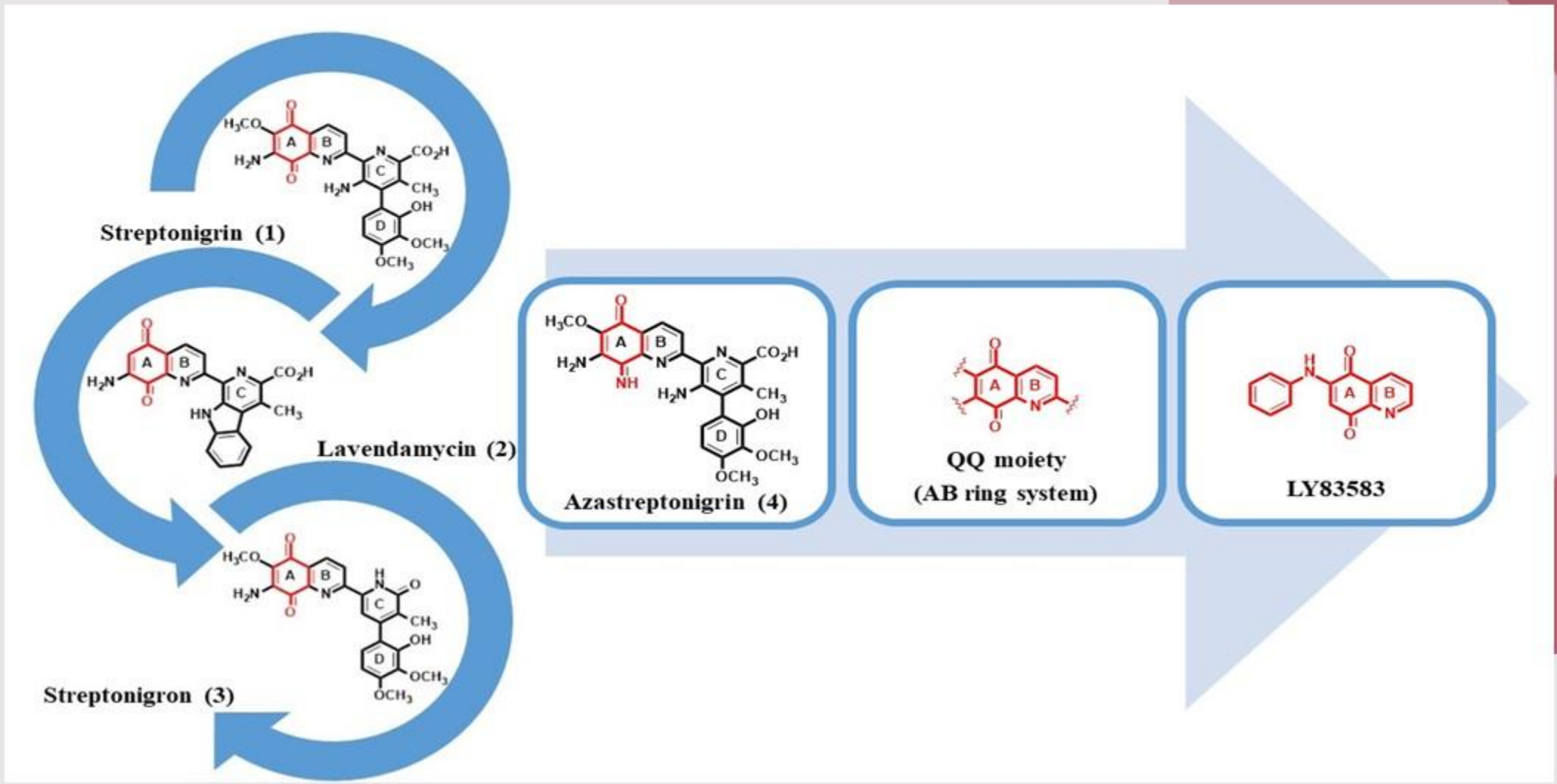
Q2

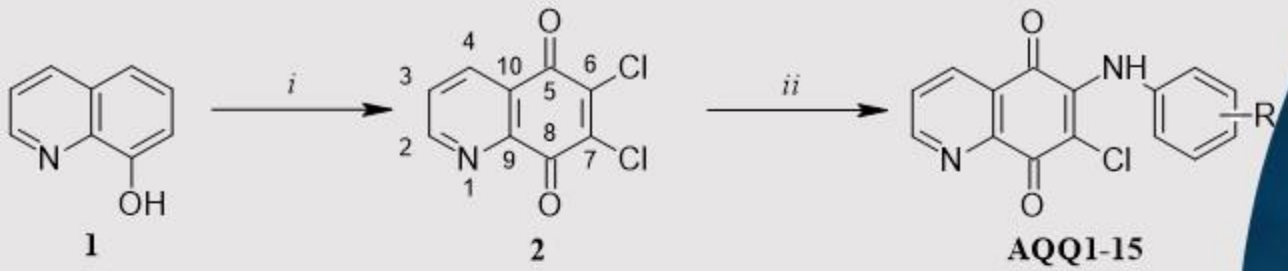
PQ15 vs Imatinib



Bayrak, N., H. Yildirim, M. Yildiz, M. O. Radwan, M. Otsuka, M. Fujita, H. I. Ciftci, and A. F. Tuyun. "A Novel Series of Chlorinated Plastoquinone Analogs: Design, Synthesis, and Evaluation of Anticancer Activity." Chemical Biology & Drug Design 95, no. 3 (Mar 2020): 343-54. https://dx.doi.org/10.1111/cbdd.13651.

B) TASARLANMIŞ MOLEKÜL TEMELLİ TASARIM





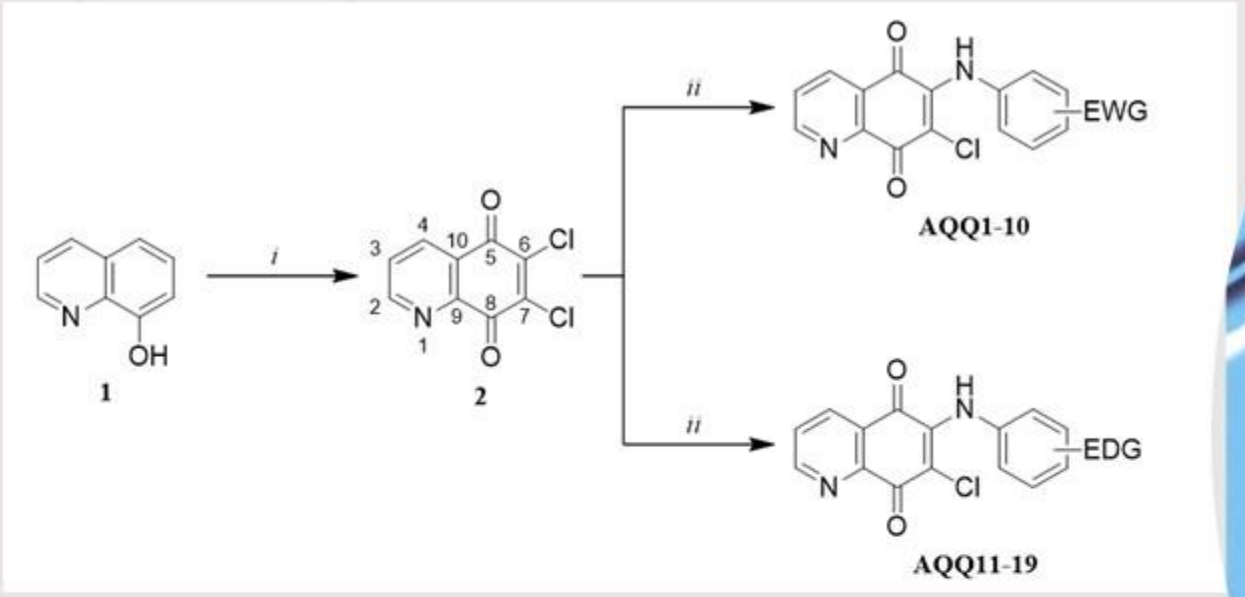
AQQ vs Imatinib

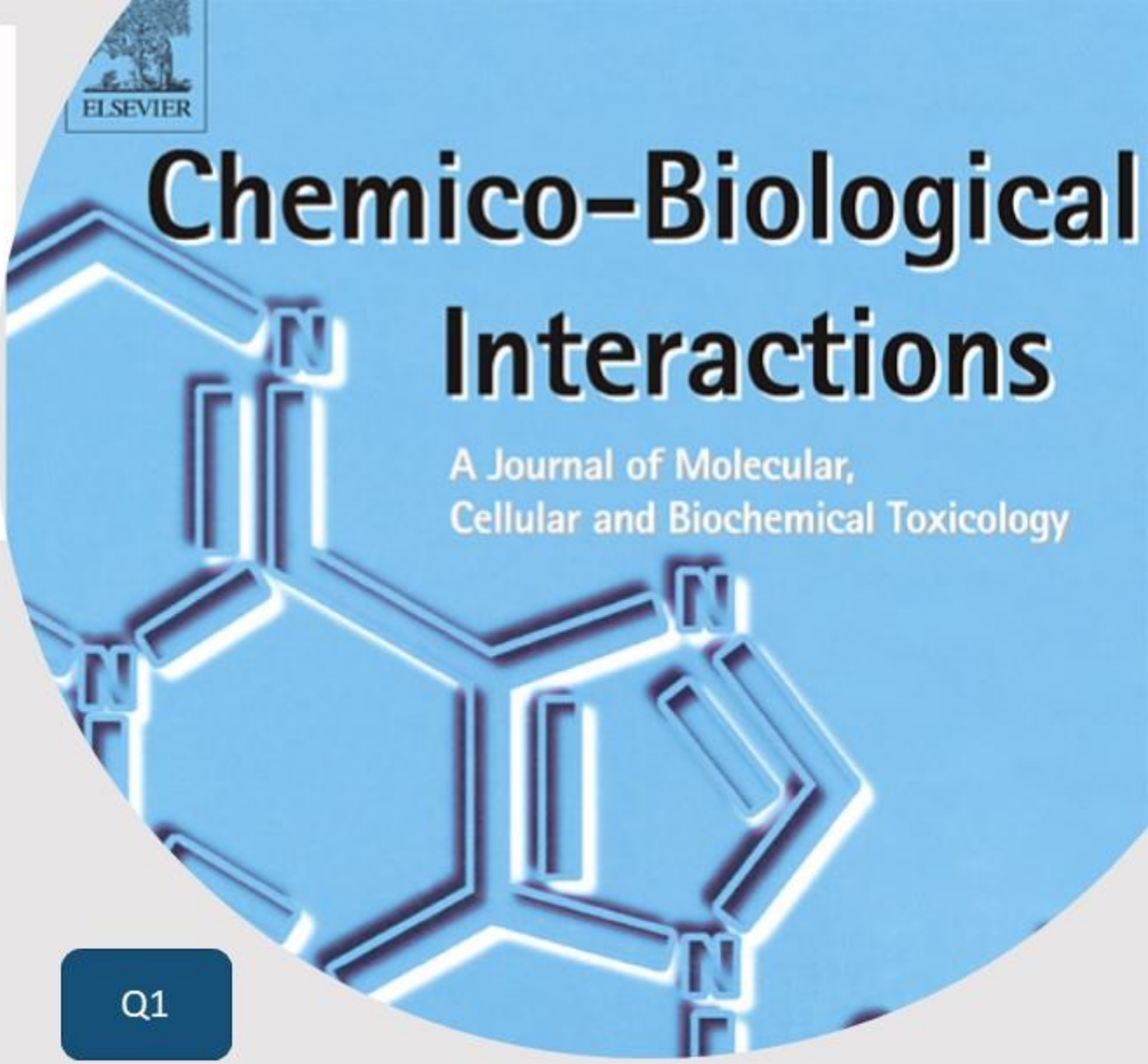




Q1

Ciftci, Halil I., Nilüfer Bayrak, Mahmut Yıldız, Hatice Yıldırım, Belgin Sever, Hiroshi Tateishi, Masami Otsuka, Mikako Fujita, and Amaç Fatih Tuyun. "Design, Synthesis and Investigation of the Mechanism of Action Underlying Anti-Leukemic Effects of the Quinolinequinones as Ly83583 Analogs." Bioorganic Chemistry 114 (2021/09/01/ 2021): 105160.





AQQ vs Imatinib



Q1

Bayrak, N., H. I. Ciftci, M. Yildiz, H. Yildirim, B. Sever, H. Tateishi, M. Otsuka, M. Fujita, and A. F. Tuyun. "Structure Based Design, Synthesis, and Evaluation of Anti-Cml Activity of the Quinolinequinones as Ly83583 Analogs." Chem Biol Interact 345 (Jun 16 2021): 109555. https://dx.doi.org/10.1016/j.cbi.2021.109555.

Kimya Anabilim Dalında Yürütülen Diğer Bilimsel Çalışmalar

- Ulusal Patent Enstitüsü tarafından tescillenmiş Patent
- TÜBİTAK-ARDEB 1001-Bilimsel ve Teknolojik Araştırma Projelerini
- Destekleme Programı çerçevesinde desteklenmiş projeler
- İstanbul Üniversitesi BAP birimi tarafından desteklenmiş projeler
- Çeşitli bilimsel kongrelerde sunulan sözlü ve poster bildirileri