



# BALKAN MEDICAL JOURNAL

The Official Journal of Trakya University School of Medicine

Volume: 43

Issue: 5

May 2026

## Editorial

**Advanced Delivery of Bioactive Agents**

*Uz and Erdoğan*

## Invited Review

**Anti-Thyroglobulin Antibodies as a Surrogate Tumor Marker**

*Eraslan Aydemir et al.*

## Original Articles

**Ginkgetin Alleviates Doxorubicin-Induced Heart Failure**

*Wang et al.*

**Fucoxanthin Protects Against BPA-Induced Testicular Damage**

*Xu et al.*

**Circ\_0004496/miR-145/ACTG1 Axis in AS**

*Zou et al.*

## Clinical Images

**Papillary Muscle Calcification in  $\beta$ -Thalassemia**

*Gül and Öztürk Efe*

**Trivalvular Infective Endocarditis**

*Georgeta et al.*

## Scientific Letters

**PJP in Immunocompetent Children**

*Wen et al.*

***Boswellia serrata* and Radiation-Induced Cerebral Edema**

*Kavuzlu et al.*

**A Thymopentin-Induced MG Case**

*Zhao et al.*

ISSN 2146-3123 • EISSN 2146-3131



Indexed in SCI Expanded and PubMed/MEDLINE • Citation Abbreviation: **Balkan Med J**

[www.balkanmedicaljournal.org](http://www.balkanmedicaljournal.org)

*Cover Design: Zehra Atabey*

*Cover Image: Designed after the photography by Behiç Gnalan.*

*(Sultan Bayezid II Complex: One of the Earliest Medical Schools, 1488, Edirne)*

### Editor-in-Chief

**id Servet ALTAY, MD**

Department of Cardiology, Trakya University School of Medicine, Edirne, Türkiye  
drservetaltay@gmail.com

### Honorary Editor

**id Ahmet ULUGÖL, MD**

Department of Pharmacology, Trakya University School of Medicine, Edirne, Türkiye  
aulugol@trakya.edu.tr

**id Zafer KOÇAK, MD**

Department of Radiation Oncology, Trakya University School of Medicine, Edirne, Türkiye  
zaferkocak12@gmail.com

### Deputy Editors

**id Suat ERDOĞAN, PhD**

Department of Medical Biology, Trakya University School of Medicine, Edirne, Türkiye  
suaterdogan@trakya.edu.tr

**id Selçuk KORKMAZ, PhD**

Department of Biostatistics and Medical Informatics, Trakya University School of Medicine, Edirne, Türkiye  
selcukorkmaz@gmail.com

**id Ufuk USTA, MD**

Department of Pathology, Trakya University School of Medicine, Edirne, Türkiye  
drufukusta@gmail.com

**id Fethi Emre USTABAŞIOĞLU, MD**

Department of Radiology, Trakya University School of Medicine, Edirne, Türkiye  
ustabasioglu@hotmail.com

**id Alperen VURAL, MD**

Department of Otolaryngology, İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Türkiye  
alperen.vural@iuc.edu.tr

### Associate Editors

**id Naziye AK, MD**

Department of Oncology, İstanbul University, İstanbul Faculty of Medicine, İstanbul, Türkiye  
naziye.ak@istanbul.edu.tr

**id Mutlu ARAT, MD**

Department of Haematology and Bone Marrow Transplantation Unit, Demiroğlu Bilim University Faculty of Medicine, İstanbul, Türkiye  
mutluarat@gmail.com

**id Murat Mert ATMACA, MD**

Clinic of Neurology, Sultan 2. Abdülhamid Han Training and Research Hospital, İstanbul, Türkiye  
drmuratmertatmaca@hotmail.com

**id Mehmet ÇELİK, MD**

Department of Endocrinology, Trakya University School of Medicine, Edirne, Türkiye  
drmehmetcelik@hotmail.com

**id Mustafa ÇIKIRIKÇIOĞLU, MD, PhD, FETCS**

Division of Cardiovascular Surgery, Department of Surgery, University Hospitals of Geneva, Geneva, Switzerland  
mustafa.cikirikioglu@hug.ch

**id Nihat Demirhan DEMİRKIRAN, MD, PhD**

Kütahya Health Sciences University Faculty of Medicine, Orthopedics and Traumatology, Kütahya, Türkiye  
drdemirhandemirkiran@gmail.com

**id Dragoslava DJERIC, MD, PhD**

Department of Otolaryngology, University of Belgrade School of Medicine, Belgrade, Serbia  
dragadj@beotel.rs

**id Marco FIORE, PhD**

Department of Molecular Biology, Institute of Cellular Biology and Neurobiology, CNR, Rome, Italy  
marco.fiore@cnr.it

**id Hüseyin GÜDÜCÜOĞLU, MD**

Department of Microbiology, Trakya University School of Medicine, Edirne, Türkiye  
huseyinguoducuoglu@trakya.edu.tr

**id Fethi GÜL, MD**

Department of Anesthesiology and Reanimation, Head Chief of Critical Care Medicine, Marmara University School of Medicine, İstanbul, Türkiye  
gulfethi@gmail.com

**id Hakan GÜRKAN, MD, PhD**

Diagnostics Center for Genetic Diseases, Trakya University School of Medicine, Edirne, Türkiye  
hgurkan@trakya.edu.tr

**id Muhammet Bekir HACIOĞLU, MD**

Department of Oncology, Trakya University School of Medicine, Edirne, Türkiye  
mbekirhacioglu@yahoo.com

**id Mert İlker HAYIROĞLU, MD**

Clinic of Cardiology, Dr. Siyami Ersek Thoracic and Cardiovascular Surgery Training and Research Hospital, İstanbul, Türkiye  
mertilker@yahoo.com

**id Marko HAWLINA, MD, PhD**

Department of Ophthalmology, University of Ljubljana School of Medicine, Ljubljana, Slovenia  
marko.hawlina@gmail.com

**id Irena HOCEVAR-BOLTEZAR, MD, PhD**

Department of Phoniatrics and Audiology, University of Ljubljana School of Medicine, Ljubljana, Slovenia  
velchevairena@gmail.com

**id Edin HUSARIC, MD, PhD**

Department of Pediatric Surgery, University Clinical Center, Tuzla, Bosnia and Herzegovina  
edin.husaric@ukactuzla.ba

**id Cihan İNAN, MD**

Department of Obstetrics and Gynecology, Trakya University School of Medicine, Edirne, Türkiye  
cihan311@hotmail.com

**id Yasemin KARAL, MD**

Department of Pediatrics, Trakya University School of Medicine, Edirne, Türkiye  
yaseminkaral@trakya.edu.tr

**id Darko KASTELAN, MD, PhD**

Department of Endocrinology, University of Zagreb School of Medicine, Zagreb, Croatia

**İD Şiran KESKE, MD,**

Clinic of Infectious Diseases and Clinical Microbiology, Koç University School of Medicine, İstanbul, Türkiye  
sirankeske@yahoo.com

**İD Ayça KIYKIM, MD**

Department of Pediatric Immunology and Allergy, İstanbul University-Cerrahpaşa Cerrahpaşa School of Medicine, İstanbul, Türkiye  
ayca.kiykim@iuc.edu.tr

**İD Shima MEHRABIAN, MD, PhD**

Department of Neurology, University Hospital Alexandrovska, Sofia, Bulgaria  
shima\_meh@yahoo.com

**İD Pavle MIKLIC, MD**

Department of Neurosurgery, University of Zagreb School of Medicine, Zagreb, Croatia

**İD Deniz PALAMAR KADIOĞLU, MD**

Department of Physical Therapy and Rehabilitation, İstanbul University-Cerrahpaşa, Cerrahpaşa School of Medicine, İstanbul, Türkiye  
denizpalar@gmail.com

**İD Berrin PAPİLA, MD**

Department of General Surgery, İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Türkiye  
papilaberrin@yahoo.com

**İD Sezgi SARIKAYA SOLAK, MD**

Department of Dermatology, Trakya University School of Medicine, Edirne, Türkiye  
sezgisarikaya@gmail.com

**İD Milan STANKOVIC, MD, PhD**

Department of Otolaryngology, University of Nis School of Medicine, Nis, Serbia  
milanorstankovic@gmail.com

**İD Eda TAHİR TURANLI, PhD, MSc**

Department of Molecular Biology and Genetics, Acıbadem University School of Medicine, İstanbul, Türkiye  
eda.turanli@acibadem.edu.tr

**İD Alparslan TURAN, MD**

Department of Outcomes Research, Anesthesiology Institute, Cleveland Clinic, Cleveland, Ohio, USA  
alparslanturan@yahoo.com

**İD İsmail Barış TÜRKBEY, MD**

Department of Radiology, National Cancer Institute, NIH, Bethesda MD, USA  
ismail.turkbey@nih.gov

**İD Serdal UĞURLU, MD**

Department of Rheumatology, İstanbul University-Cerrahpaşa, Cerrahpaşa Faculty of Medicine, İstanbul, Türkiye  
serdalugurlu@gmail.com

**İD Yeşim Hülya UZ, MD**

Department of Histology and Embryology, Trakya University School of Medicine, Edirne, Türkiye  
yesimuz@yahoo.com

**İD Irena VELCHEVA, MD, PhD**

Department of Neurology, Medical University, Sofia, Bulgaria  
velchevairena@gmail.com

**İD Stanislav YANEV, MD, PhD**

Department of Pharmacology, Bulgarian Academy of Sciences, Sofia, Bulgaria  
stanislav\_yanev@yahoo.com

**İD Ozan AKÇA, MD, FCCM**

Department of Anesthesiology & Perioperative Medicine, Johns Hopkins University, University of Louisville, Baltimore, Louisville, United States  
oakca1@jhmi.edu

**İD Kostadin Georgiev ANGELOV, MD, PhD**

Department of Surgery, Medical University-Sofia Faculty of Medicine, Sofia, Bulgaria  
dr.k.angelov@gmail.com

**Biostatistics Editor**

**İD Selçuk KORKMAZ, PhD**

Department of Biostatistics and Medical Informatics, Trakya University School of Medicine, Edirne, Türkiye  
selcukorkmaz@gmail.com

**Ethics Editor**

**İD Berna ARDA, MD, PhD**

Department of History of Medicine and Medical Ethics, Ankara University School of Medicine, Ankara, Türkiye  
berna.arda@medicine.ankara.edu.tr

**Assistant Associate Editors**

**İD Gözde AKTÜRK, MD**

Department of Pharmacology, Trakya University School of Medicine, Edirne, Türkiye  
gozde\_akturk\_66@hotmail.com

**İD Gökhan ÇEVİK, MD**

Department of Urology, Trakya University School of Medicine, Edirne, Türkiye  
gokhancevik59@hotmail.com

**İD Tuğcan Alp KIRKIZLAR, MD**

Department of Hematology, Trakya University School of Medicine, Edirne, Türkiye  
tugcanalp82@hotmail.com

**İD İdris KURT, MD**

Department of Gastroenterology, Trakya University School of Medicine, Edirne, Türkiye  
idrisk8607055022@gmail.com

**İD Ethem YILDIZ, MD**

Department of Chest Diseases, Trakya University School of Medicine, Edirne, Türkiye  
ethemyildiz84@gmail.com

**İD Sinemis Çetin DAĞLI, MD**

Department of Public Health, Van Yüzüncü Yıl University, Van, Türkiye  
sinemiscetinadagli@yyu.edu.tr

**İD Ulviye KIVRAK, MD**

Clinic of Ophthalmology, University of Health Sciences Türkiye, Kartal Dr. Lütfi Kırdar City Hospital, İstanbul, Türkiye  
dr.ulviyekivrak@hotmail.com

Please refer to the journal's webpage ([www.balkanmedicaljournal.org](http://www.balkanmedicaljournal.org)) for "Editorial Policy", "Instructions to Authors" and "Instructions to Reviewers".

The *Balkan Medical Journal* and/or its editors are members of ICMJE, COPE, WAME, CSE and EASE, and follow their recommendations. The *Balkan Medical Journal* is indexed in Science Citation Index Expanded (Web of Science), Journal Citation Reports, PubMed/MEDLINE, PubMed Central, Scopus, EMBASE, DOAJ, Chemical Abstracts, CINAHL, EBSCO, J-Gate, GALE, ProQuest, Türk Medline, Türkiye Atıf Dizini, IdealOnline, Global Health, UDL-EDGE, Hinari, GOALI, ARDI, OARE, AGORA, TÜBİTAK ULAKBİM TR Index and CNKI.

**Owner:** Sedat Üstündağ on Behalf of Trakya University School of Medicine

**Responsible Manager:** Servet ALTAY



**Publisher Contact**

Address: Molla Gürani Mah. Kaçamak Sk. No: 21/1  
34093 İstanbul, Türkiye

Phone: +90 (530) 177 30 97 / +90 (539) 307 32 03

E-mail: [info@galenos.com.tr](mailto:info@galenos.com.tr) / [yayin@galenos.com.tr](mailto:yayin@galenos.com.tr)

Web: [www.galenos.com.tr](http://www.galenos.com.tr)

Publisher Certificate Number: 14521

**Publication Date:** April 2026

**E-ISSN:** 2146-3131

International scientific journal published monthly.

## CONTENTS

### Editorial

- 227 **Enhancing the Therapeutic Index of Bioactive Compounds Through Novel Delivery Systems**

*Yeşim Hülya Uz, Suat Erdoğan; Edirne, Türkiye*

### Invited Review

- 230 **Anti-Thyroglobulin Antibodies as a Surrogate Tumor Marker for the Follow-Up of the Differentiated Thyroid Carcinoma: Clinical Implications and Pitfalls**

*Esra Eraslan Aydemir, Feride Özkara Akkuş, Murat Faik Erdoğan; Ankara, Türkiye*

### Original Articles

- 238 **Ginkgetin Alleviates Doxorubicin-Induced Heart Failure by Regulating Mitochondrial Dysfunction Through the AMPK/Sirt1/NF-κB Signaling Pathway**

*Yanfu Wang, Chong Wang, Wei Li, Xinyu Ren, Yubo Peng, Yan Zhang; Beijing, China*

- 253 **Fucoxanthin Attenuates Bisphenol A-Induced Testicular Injury via NF-κB-Mediated Pyroptosis Inhibition**

*Ke Xu, Xiangyu Ren, Hongjie Cao, Tiantian Lyu, Zuisu Yang, Fangfang Huang; Zhoushan, China*

- 267 **Overexpression of Circ\_0004496 is Associated with Pathological Bone Formation in Ankylosing Spondylitis via the miR-145/ACTG1 Axis**

*Yu-Cong Zou, Yong-Sheng Wu, Ting Hu, Hao-Bin Zeng; Zhuhai, Foshan, Beijing, China*

### Clinical Images

- 281 **Papillary Muscle Calcification as a Rare Cardiac Manifestation of β-Thalassemia-Related Pseudoxanthoma Elasticum-Like Syndrome**

*Fethi Gül, Damla Öztürk Efe; İstanbul, Tekirdağ, Türkiye*

- 283 **Triple-Valve Infective Endocarditis**

*Mihalache Georgeta, Spataru Anastasia, Chiriac Snejana, Lefter Oxana, Barcaru Dumitrița, Oprea Catalina, Ureche Andrei; Chisinau, Moldova*

### Scientific Letters

- 285 **Clinical Features, Laboratory and Radiological Findings, and Outcomes of *Pneumocystis jirovecii* Pneumonia in Immunocompetent Children**

*Limei Wen, Li Huang, Junjie Ning; Zigong, China*

- 288 **Treatment of Steroid-Resistant Radiation-Induced Cerebral Edema with *Boswellia serrata***

*Yusuf Kavuzlu, Serdar Solak, Zafer Koçak; Edirne, Türkiye*

- 291 **Thymopentin-Induced Myasthenia Gravis: A Case Report Highlighting Clinical Vigilance**

*Ning Zhao, Li Yang, Ting Li; Tianjin, China*