



Türkiye Klinikleri

Geriatric Pharmacology and Pharmacotherapy

Geriatrik Farmakoloji ve Farmakoterapi

Editor / Editör: Prof. Dr. Canan ULUOĞLU

Associate Editors / Editör Yardımcıları: Prof. Dr. Aylin ARICI

Assoc. Prof. Dr. Volkan AYDIN

All rights are reserved by Ortadoğu Reklam Tanıtım Yayıncılık Turizm Eğitim İnşaat Sanayi ve Ticaret A.Ş. The questions, writings, pictures, tables, graphics, and figures published in this book cannot be printed or reproduced in whole or in part by electronic or mechanic ways without the written consent of the publisher. Summarizing and citation for scientific purposes (by specifying the reference) is allowed.

Kitabın her türlü yayın hakkı Ortadoğu Reklam Tanıtım Yayıncılık Turizm Eğitim İnşaat Sanayi ve Ticaret A.Ş. 'ye aittir. Kitaptaki soru, yazı, resim, tablo, grafik ve şekiller kısmen de olsa yayıncının yazılı izni alınmadan, elektronik veya mekanik yöntemlerle basılamaz, çoğaltılamaz. Yalnızca bilimsel amaçlarla (kaynak göstermek kaydıyla) özetleme ve alıntı yapılabilir.

E-ISBN: 978-625-395-161-0

© 2023 Ortadoğu Reklam Tanıtım Yayıncılık Turizm Eğitim İnşaat Sanayi ve Ticaret A.Ş.

Türkiye Klinikleri Publication Serial Number - Türkiye Klinikleri Yayın Seri No: 1539

1st Edition (1. Baskı), December (Aralık), Ankara-Türkiye



Türkiye Klinikleri

YAYIMCI - PUBLISHER

Ortadoğu Reklam Tanıtım Yayıncılık Turizm Eğitim İnşaat Sanayi ve Ticaret A.Ş. (Türkiye Klinikleri)

Türkocağı Cad. No:30 06520 Balgat/Ankara/Türkiye

Phone/Tel : +90 312 286 56 56

Fax/Faks : +90 312 220 04 70

e-mail/e-posta : info@turkiyeklinikleri.com

web : www.turkiyeklinikleri.com

Certificate No/Sertifika No : 48768

Geriatric Pharmacology and Pharmacotherapy

Geriatrik Farmakoloji ve Farmakoterapi

EDITOR / EDİTÖR

Prof. Dr. Canan ULUOĞLU (*Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*)

ASSOCIATE EDITORS / EDİTÖR YARDIMCILARI

Prof. Dr. Aylin ARICI, *Dokuz Eylül University Faculty of Medicine, Department of Clinical Pharmacology, İzmir, Türkiye*

Assoc. Prof. Dr. Volkan AYDIN *İstanbul Medipol University International Faculty of Medicine,
Department of Medical Pharmacology, İstanbul, Türkiye*

AUTHORS / YAZARLAR

Prof. Dr. Ahmet AKICI, *Marmara University Faculty of Medicine, Department of Medical Pharmacology, İstanbul, Türkiye*

Assoc. Prof. Dr. Erhan AKINCI, *Ataşehir Acıbadem Hospital, Department of Psychiatry, İstanbul, Türkiye*

Pharm. Seval AKYÜREK, *İstanbul University Faculty of Pharmacy, Department of Pharmacology (Master's Program), İstanbul, Türkiye*

Assoc. Prof. Dr. Ahmet ALTUN, *Sivas Cumhuriyet University Faculty of Medicine, Department of Medical Pharmacology, Sivas, Türkiye*

Specialist Dr. Gülşah ALTUN, *Sivas State Hospital, Clinical of Internal Medicine, Sivas, Türkiye*

Prof. Dr. Aylin ARICI, *Dokuz Eylül University Faculty of Medicine, Department of Clinical Pharmacology, İzmir, Türkiye*

Dr. Celil İlker AŞKIN, *Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Assoc. Prof. Dr. Volkan AYDIN *İstanbul Medipol University International Faculty of Medicine,
Department of Medical Pharmacology, İstanbul, Türkiye*

Prof. Dr. Tolga Reşat AYDOS, *Başkent University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Assist. Prof. Dr. Elif BARIŞ, *İzmir University of Economics Faculty of Medicine, Department of Medical Pharmacology, İzmir, Türkiye*

Assoc. Prof. Dr. Hacer DOĞAN VARAN, *Gazi University Faculty of Medicine,*

Department of Internal Medicine, Division of Geriatrics, Ankara, Türkiye

Dr. Aygül DURDURUR ÇİN, *Ankara University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Prof. Dr. Ş. Remzi ERDEM, *Başkent University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Prof. Dr. Hakan ERGÜN, *Ankara University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Prof. Dr. Ali Serdar FAK, *Marmara University Hypertension and Atherosclerosis Research Center, İstanbul, Türkiye*

Prof. Dr. Yeřim GÖKÇE KUTSAL, *Hacettepe University Faculty of Medicine,*

Department of Physical Medicine and Rehabilitation, Ankara, Türkiye)

Prof. Dr. Sinem Ezgi GÜLMEZ, *Koç University Faculty of Medicine, Department of Medical Pharmacology, İstanbul, Türkiye*

Dr. Onur GÜLTEKİN, *Marmara University Faculty of Medicine, Department of Medical Pharmacology, İstanbul, Türkiye*

Prof. Dr. Mukaddes GÜMÜŐTEKİN, *Dokuz Eylül University Faculty of Medicine, Department of Clinical Pharmacology, İzmir, Türkiye*

Specialist Dr. Arzu GÜNEŐ GRANBERG, *Novartis Institute of Biomedical Research Translational Medicine Director, Basel, Switzerland*

Dr. Muhammed Cihan GÜVEL, *Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Prof. Dr. Rahim HORUZ, *Bağcılar Medipol Mega University Hospital, Department of Urology, İstanbul, Türkiye*

Prof. Dr. Sevil Özger İLHAN, *Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Specialist Dr. Fatma İŐLİ, *Turkish Medicines and Medical Devices Agency, Department of Rational Use of Medicines, Ankara, Türkiye*

Specialist Dr. Nermin KARAKURT, *Gazi University Faculty of Medicine,*

Department of Internal Medicine, Division of Geriatrics, Ankara, Türkiye

Prof. Dr. İ. Halil KAVAKLI, *Koç University Faculty of Engineering, Department of Chemical and Biological Engineering, İstanbul, Türkiye*

Assist. Prof. Dr. N. İpek KIRMIZI SÖNMEZ, *Bahçeşehir University Faculty of Pharmacy, Department of Pharmacology, İstanbul, Türkiye*

Prof. Dr. İpek Kıvılcım OĞUZÜLGEN, *Gazi University Faculty of Medicine, Department of Chest Diseases, Ankara, Türkiye*

Prof. Dr. Alper OKYAR, *İstanbul University Faculty of Pharmacy, Department of Pharmacology, İstanbul, Türkiye*

Dr. Halit Güner ORHAN, *Başkent University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Assoc. Prof. Dr. Gökçe Sevim ÖZTÜRK FİNCAN, *Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Assoc. Prof. Dr. Zeynep Güneő ÖZÜNAL, *Atlas University Faculty of Medicine, Department of Medical Pharmacology, İstanbul, Türkiye*

Dr. Gökçen PAYKAL, *Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Assist. Prof. Dr. Kubilay SABUNCU, *Bağcılar Medipol Mega University Hospital, Department of Urology, İstanbul, Türkiye*

Assoc. Prof. Dr. Arzu SAYIN ŐAKUL, *İstanbul Medipol University Faculty of Medicine,*

Department of Medical Pharmacology, İstanbul, Türkiye

Assoc. Prof. Dr. Hüseyin Salih SEMİZ, *Dokuz Eylül University Oncology Institute, Department of Preventive Oncology, İzmir, Türkiye*

Assist. Prof. Dr. Mehmet Orkun SEVİK, *Marmara University Faculty of Medicine, Department of Ophthalmology, İstanbul, Türkiye*

Assoc. Prof. Dr. Gökhan TAZEGÜL, *Marmara University Faculty of Medicine, Department of Internal Medicine, İstanbul, Türkiye*

Prof. Dr. Berna TERZİOĞLU BEBİTOĞLU, *Marmara University Faculty of Medicine, Department of Medical Pharmacology, İstanbul, Türkiye*

Prof. Dr. Yeřim TUNÇOK, *Dokuz Eylül University Faculty of Medicine, Department of Medical Pharmacology, İzmir, Türkiye*

Prof. Dr. Canan ULUOĞLU, *Gazi University Faculty of Medicine, Department of Medical Pharmacology, Ankara, Türkiye*

Prof. Dr. Sibel ÜLKER GÖKSEL, *Ege University Faculty of Medicine, Department of Medical Pharmacology, İzmir, Türkiye*

Dr. Caner VIZDIKLAR, *Marmara University Faculty of Medicine, Department of Medical Pharmacology, İstanbul, Türkiye*

Prof. Dr. İsmail Mert VURAL, *University of Health Sciences Gülhane Faculty of Pharmacy, Department of Pharmacology, Ankara, Türkiye*

Prof. Dr. Abdullah Serkan YENER, *Dokuz Eylül University Faculty of Medicine,*

Department of Endocrinology and Metabolic Diseases, İzmir, Türkiye