

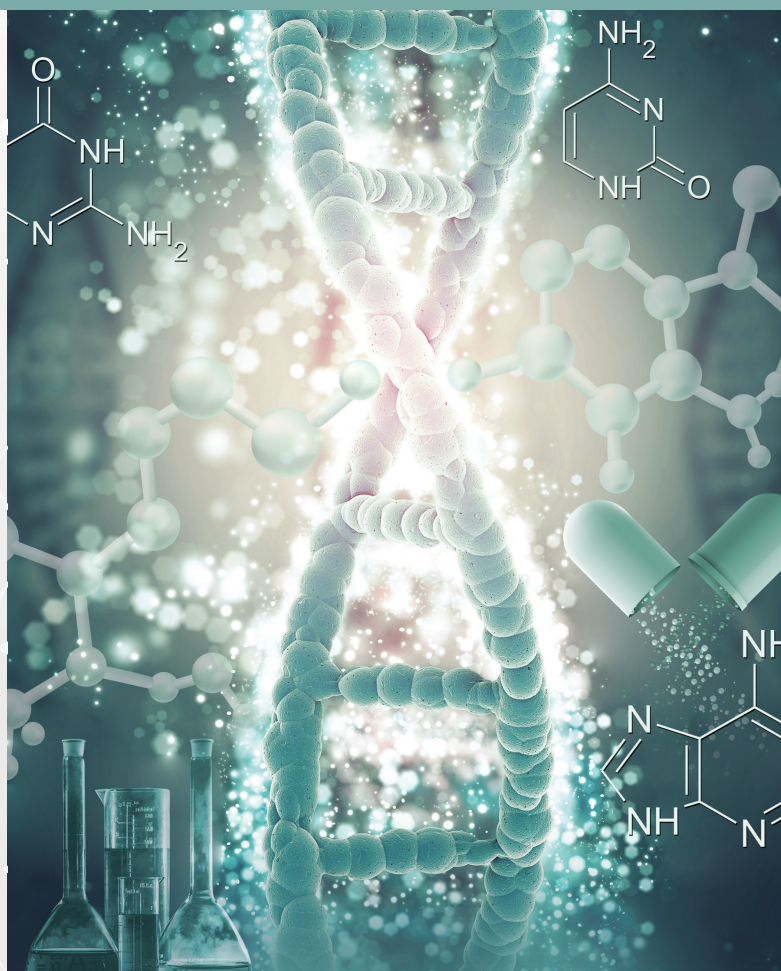
E-ISSN: 2148-6247



Turkish Journal of PHARMACEUTICAL SCIENCES

An Official Journal of the Turkish Pharmacists' Association, Academy of Pharmacy

Volume: 20 Issue: 2 April 2023



www.turkjps.org





Turkish Journal of PHARMACEUTICAL SCIENCES

OWNER

Onur Arman ÜNEY on behalf of the Turkish Pharmacists' Association

Editor-in-Chief

Prof. İlkey Erdoğan Orhan, Ph.D.

ORCID: <https://orcid.org/0000-0002-7379-5436>

Gazi University, Faculty of Pharmacy, Department of Pharmacognosy, Ankara, TÜRKİYE
iorhan@gazi.edu.tr

Associate Editors

Prof. Bensu Karahaliil, Ph.D.

ORCID: <https://orcid.org/0000-0003-1625-6337>

Gazi University, Faculty of Pharmacy,
Department of Pharmaceutical Toxicology, Ankara, TÜRKİYE
bensu@gazi.edu.tr

Assoc. Prof. Sinem Aslan Erdem, Ph.D.

ORCID: <https://orcid.org/0000-0003-1504-1916>

Ankara University, Faculty of Pharmacy, Department of
Pharmacognosy, Ankara, TÜRKİYE
saslan@pharmacy.ankara.edu.tr

Editorial Board

Prof. Afonso Miguel CAVACO, Ph.D.

ORCID: orcid.org/0000-0001-8466-0484

Lisbon University, Faculty of Pharmacy, Department
of Pharmacy, Pharmacology and Health Technologies,
Lisboa, PORTUGAL
acavaco@campus.ul.pt

Prof. Bezhan CHANKVETADZE, Ph.D.

ORCID: orcid.org/0000-0003-2379-9815

Ivane Javakhishvili Tbilisi State University, Institute of
Physical and Analytical Chemistry, Tbilisi, GEORGIA
jpb_a_bezhan@yahoo.com

Prof. Blanca LAFFON, Ph.D.

ORCID: orcid.org/0000-0001-7649-2599

DICOMOSA group, Advanced Scientific Research
Center (CICA), Department of Psychology, Area
Psychobiology, University of A Coruña, Central
Services of Research Building (ESCI), Campus Elviña
s/n, A Coruña, SPAIN
blanca.laffon@udc.es

Prof. Christine LAFFORGUE, Ph.D.

ORCID: orcid.org/0000-0001-7798-2565

Paris Saclay University, Faculty of Pharmacy,
Department of Dermopharmacology and
Cosmetology, Paris, FRANCE
christine.lafforgue@universite-paris-saclay.fr

Prof. Dietmar FUCHS, Ph.D.

ORCID: orcid.org/0000-0003-1627-9563

Innsbruck Medical University, Center for Chemistry
and Biomedicine, Institute of Biological Chemistry,
Biocenter, Innsbruck, AUSTRIA
dietmar.fuchs@i-med.ac.at

Prof. Francesco EPIFANO, Ph.D.

ORCID: [0000-0002-0381-7812](https://orcid.org/0000-0002-0381-7812)

Università degli Studi G. d'Annunzio Chieti e Pescara,
Chieti CH, ITALY
francesco.epifano@unich.it

Prof. Fernanda BORGES, Ph.D.

ORCID: orcid.org/0000-0003-1050-2402

Porto University, Faculty of Sciences, Department of
Chemistry and Biochemistry, Porto, PORTUGAL
fborges@fc.up.pt

Prof. Göksel ŞENER, Ph.D.

ORCID: orcid.org/0000-0001-7444-6193

Fenerbahçe University, Faculty of Pharmacy,
Department of Pharmacology, İstanbul, TÜRKİYE
gsener@marmara.edu.tr

Prof. Gülbin ÖZÇELİKAY, Ph.D.

ORCID: orcid.org/0000-0002-1580-5050

Ankara University, Faculty of Pharmacy, Department
of Pharmacy Management, Ankara, TÜRKİYE
gozcelikay@ankara.edu.tr

Prof. Hermann BOLT, Ph.D.

ORCID: orcid.org/0000-0002-5271-5871

Dortmund University, Leibniz Research Centre, Institute
of Occupational Physiology, Dortmund, GERMANY
bolt@ifado.de

Prof. Hildebert WAGNER, Ph.D.

Ludwig-Maximilians University, Center for
Pharmaceutical Research, Institute of Pharmacy,
Munich, GERMANY
H.Wagner@cup.uni-muenchen.de

Prof. İ. İrem ÇANKAYA, Ph.D.

ORCID: orcid.org/0000-0001-8531-9130

Hacettepe University, Faculty of Pharmacy, Department
of Pharmaceutical Botany, Ankara, TÜRKİYE
itatli@hacettepe.edu.tr

Prof. K. Arzum ERDEM GÜRSAN, Ph.D.

ORCID: orcid.org/0000-0002-4375-8386

Ege University, Faculty of Pharmacy, Department of
Analytical Chemistry, İzmir, TÜRKİYE
arzum.erdem@ege.edu.tr

Prof. Bambang KUSWANDI, Ph.D.

ORCID: [0000-0002-1983-6110](https://orcid.org/0000-0002-1983-6110)

Chemo and Biosensors Group, Faculty of Pharmacy
University of Jember, East Java, INDONESIA
b_kuswandi.farmasi@unej.ac.id

Prof. Luciano SASO, Ph.D.

ORCID: orcid.org/0000-0003-4530-8706

Sapienze University, Faculty of Pharmacy
and Medicine, Department of Physiology and
Pharmacology "Vittorio Erspamer", Rome, ITALY
luciano.saso@uniroma1.it

Prof. Maarten J. POSTMA, Ph.D.

ORCID: orcid.org/0000-0002-6306-3653

University of Groningen (Netherlands), Department
of Pharmacy, Unit of Pharmacoepidemiology &
Pharmacoeconomics, Groningen, HOLLAND
m.j.postma@rug.nl

Prof. Meriç KÖKSAL AKKOÇ, Ph.D.

ORCID: orcid.org/0000-0001-7662-9364

Yeditepe University, Faculty of Pharmacy, Department
of Pharmaceutical Chemistry, İstanbul, TÜRKİYE
merickoksal@yeditepe.edu.tr

Prof. Mesut SANCAR, Ph.D.

ORCID: orcid.org/0000-0002-7445-3235

Marmara University, Faculty of Pharmacy, Department
of Clinical Pharmacy, İstanbul, TÜRKİYE
mesut.sancar@marmara.edu.tr

**Assoc. Prof. Nadja Cristhina de SOUZA
PINTO, Ph.D.**

ORCID: orcid.org/0000-0003-4206-964X

University of São Paulo, Institute of Chemistry, São
Paulo, BRAZIL
nadja@iq.usp.br



Turkish Journal of PHARMACEUTICAL SCIENCES

Assoc. Prof. Neslihan AYGÜN KOCABAŞ, Ph.D. E.R.T.

ORCID: orcid.org/0000-0000-0000-0000
Total Research & Technology Feluy Zone
Industrielle Feluy, Refining & Chemicals, Strategy
– Development - Research, Toxicology Manager,
Seneffe, BELGIUM
neslihan.aygun.kocabas@total.com

Prof. Rob VERPOORTE, Ph.D.

ORCID: orcid.org/0000-0001-6180-1424
Leiden University, Natural Products Laboratory,
Leiden, NETHERLANDS
verpoort@chem.leidenuniv.nl

Prof. Robert RAPOPORT, Ph.D.

ORCID: orcid.org/0000-0001-8554-1014
Cincinnati University, Faculty of Pharmacy,
Department of Pharmacology and Cell Biophysics,
Cincinnati, USA
robertrapoport@gmail.com

Prof. Tayfun UZBAY, Ph.D.

ORCID: orcid.org/0000-0002-9784-5637
Üsküdar University, Faculty of Medicine,
Department of Medical Pharmacology, Istanbul,
TÜRKİYE
tayfun.uzbay@uskudar.edu.tr

Prof. Wolfgang SADEE, Ph.D.

ORCID: orcid.org/0000-0003-1894-6374 Ohio State
University, Center for Pharmacogenomics, Ohio,
USA
wolfgang.sadee@osumc.edu

Advisory Board

Prof. Yusuf ÖZTÜRK, Ph.D.

Anadolu University, Faculty of Pharmacy,
Department of Pharmacology, Eskişehir, TÜRKİYE
ORCID: [0000-0002-9488-0891](https://orcid.org/0000-0002-9488-0891)

Prof. Tayfun UZBAY, Ph.D.

Üsküdar University, Faculty of Medicine,
Department of Medical Pharmacology, Istanbul,
TÜRKİYE
ORCID: orcid.org/0000-0002-9784-5637

Prof. K. Hüsnü Can BAŞER, Ph.D.

Anadolu University, Faculty of Pharmacy,
Department of Pharmacognosy, Eskişehir, TÜRKİYE
ORCID: [0000-0003-2710-0231](https://orcid.org/0000-0003-2710-0231)

Prof. Erdem YEŞİLADA, Ph.D.

Yeditepe University, Faculty of Pharmacy,
Department of Pharmacognosy, Istanbul, TÜRKİYE
ORCID: [0000-0002-1348-6033](https://orcid.org/0000-0002-1348-6033)

Prof. Yılmaz ÇAPAN, Ph.D.

Hacettepe University, Faculty of Pharmacy,
Department of Pharmaceutical Technology, Ankara,
TÜRKİYE
ORCID: [0000-0003-1234-9018](https://orcid.org/0000-0003-1234-9018)

Prof. Sibel A. ÖZKAN, Ph.D.

Ankara University, Faculty of Pharmacy,
Department of Analytical Chemistry, Ankara,
TÜRKİYE
ORCID: [0000-0001-7494-3077](https://orcid.org/0000-0001-7494-3077)

Prof. Ekrem SEZİK, Ph.D.

Istanbul Health and Technology University, Faculty
of Pharmacy, Department of Pharmacognosy,
Istanbul, TÜRKİYE
ORCID: [0000-0002-8284-0948](https://orcid.org/0000-0002-8284-0948)

Prof. Gönül ŞAHİN, Ph.D.

Eastern Mediterranean University, Faculty of
Pharmacy, Department of Pharmaceutical
Toxicology, Famagusta, CYPRUS
ORCID: [0000-0003-3742-6841](https://orcid.org/0000-0003-3742-6841)

Prof. Sevda ŞENEL, Ph.D.

Hacettepe University, Faculty of Pharmacy,
Department of Pharmaceutical Technology, Ankara,
TÜRKİYE
ORCID: [0000-0002-1467-3471](https://orcid.org/0000-0002-1467-3471)

Prof. Sevim ROLLAS, Ph.D.

Marmara University, Faculty of Pharmacy,
Department of Pharmaceutical Chemistry, Istanbul,
TÜRKİYE
ORCID: [0000-0002-4144-6952](https://orcid.org/0000-0002-4144-6952)

Prof. Göksel ŞENER, Ph.D.

Fenerbahçe University, Faculty of Pharmacy,
Department of Pharmacology, Istanbul, TÜRKİYE
ORCID: [0000-0001-7444-6193](https://orcid.org/0000-0001-7444-6193)

Prof. Erdal BEDİR, Ph.D.

İzmir Institute of Technology, Department of
Bioengineering, İzmir, TÜRKİYE
ORCID: [0000-0003-1262-063X](https://orcid.org/0000-0003-1262-063X)

Prof. Nurşen BAŞARAN, Ph.D.

Hacettepe University, Faculty of Pharmacy,
Department of Pharmaceutical Toxicology, Ankara,
TÜRKİYE
ORCID: [0000-0001-8581-8933](https://orcid.org/0000-0001-8581-8933)

Prof. Benu KARAHALİL, Ph.D.

Gazi University, Faculty of Pharmacy, Department
of Pharmaceutical Toxicology, Ankara, TÜRKİYE
ORCID: [0000-0003-1625-6337](https://orcid.org/0000-0003-1625-6337)

Prof. Betül DEMİRCİ, Ph.D.

Anadolu University, Faculty of Pharmacy,
Department of Pharmacognosy, Eskişehir, TÜRKİYE
ORCID: [0000-0003-2343-746X](https://orcid.org/0000-0003-2343-746X)

Prof. Bengi USLU, Ph.D.

Ankara University, Faculty of Pharmacy, Department
of Analytical Chemistry, Ankara, TÜRKİYE
ORCID: [0000-0002-7327-4913](https://orcid.org/0000-0002-7327-4913)

Prof. Ahmet AYDIN, Ph.D.

Yeditepe University, Faculty of Pharmacy,
Department of Pharmaceutical Toxicology, Istanbul,
TÜRKİYE
ORCID: [0000-0003-3499-6435](https://orcid.org/0000-0003-3499-6435)

Prof. İlkay ERDOĞAN ORHAN, Ph.D.

Gazi University, Faculty of Pharmacy, Department
of Pharmacognosy, Ankara, TÜRKİYE
ORCID: [0000-0002-7379-5436](https://orcid.org/0000-0002-7379-5436)

Prof. Ş. Güniz KÜÇÜKGÜZEL, Ph.D.

Fenerbahçe University Faculty of Pharmacy,
Department of Pharmaceutical Chemistry, Istanbul,
TÜRKİYE
ORCID: [0000-0001-9405-8905](https://orcid.org/0000-0001-9405-8905)

Prof. Engin Umut AKKAYA, Ph.D.

Dalian University of Technology, Department of
Chemistry, Dalian, CHINA
ORCID: [0000-0003-4720-7554](https://orcid.org/0000-0003-4720-7554)

Prof. Esra AKKOL, Ph.D.

Gazi University, Faculty of Pharmacy, Department
of Pharmacognosy, Ankara, TÜRKİYE
ORCID: [0000-0002-5829-7869](https://orcid.org/0000-0002-5829-7869)

Prof. Erem BİLENSOY, Ph.D.

Hacettepe University, Faculty of Pharmacy,
Department of Pharmaceutical Technology, Ankara,
TÜRKİYE
ORCID: [0000-0003-3911-6388](https://orcid.org/0000-0003-3911-6388)

Prof. Uğur TAMER, Ph.D.

Gazi University, Faculty of Pharmacy, Department
of Analytical Chemistry, Ankara, TÜRKİYE
ORCID: [0000-0001-9989-6123](https://orcid.org/0000-0001-9989-6123)

Prof. Gülaçtı TOPÇU, Ph.D.

Bezmialem Vakıf University, Faculty of Pharmacy,
Department of Pharmacognosy, Istanbul, TÜRKİYE
ORCID: [0000-0002-7946-6545](https://orcid.org/0000-0002-7946-6545)

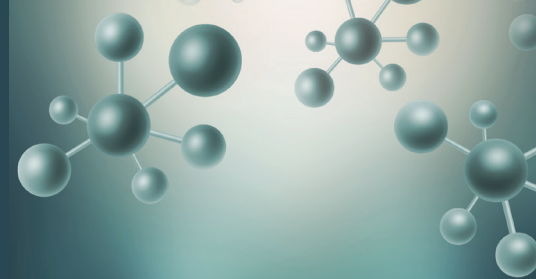
Prof. Hasan KIRMIZIBEKMEZ, Ph.D.

Yeditepe University, Faculty of Pharmacy,
Department of Pharmacognosy, Istanbul, TÜRKİYE
ORCID: [0000-0002-6118-8225](https://orcid.org/0000-0002-6118-8225)

Douglas Siqueira de Almeida Chaves, Ph.D.

Federal Rural University of Rio de Janeiro,
Department of Pharmaceutical Sciences, Rio de
Janeiro, BRAZIL
ORCID: [0000-0002-0571-9538](https://orcid.org/0000-0002-0571-9538)

**Members of the Advisory Board consist of the scientists
who received Science Award presented by TEB Academy
of Pharmacy in chronological order.*



Turkish Journal of PHARMACEUTICAL SCIENCES

AIMS AND SCOPE

The Turkish Journal of Pharmaceutical Sciences is the only scientific periodical publication of the Turkish Pharmacists' Association and has been published since April 2004.

Turkish Journal of Pharmaceutical Sciences journal is regularly published 6 times in a year (February, April, June, August, October, December). The issuing body of the journal is Galenos Yayınevi/Publishing House level. The aim of Turkish Journal of Pharmaceutical Sciences is to publish original research papers of the highest scientific and clinical value at an international level.

The target audience includes specialists and professionals in all fields of pharmaceutical sciences.

The editorial policies are based on the "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (ICMJE Recommendations)" by the International Committee of Medical Journal Editors (20, archived at <http://www.icmje.org/>) rules.

Editorial Independence

Turkish Journal of Pharmaceutical Sciences is an independent journal with independent editors and principles and has no commercial relationship with the commercial product, drug or pharmaceutical company regarding decisions and review processes upon articles.

ABSTRACTED/INDEXED IN

PubMed
PubMed Central
Web of Science-Emerging Sources Citation Index (ESCI)
SCOPUS SJR
TÜBİTAK/ULAKBİM TR Dizin
ProQuest
Chemical Abstracts Service (CAS)
EBSCO
EMBASE
GALE
Index Copernicus
Analytical Abstracts
International Pharmaceutical Abstracts (IPA)
Medicinal & Aromatic Plants Abstracts (MAPA)
British Library
CSIR INDIA
GOALI
Hinari
OARE
ARDI
AGORA
Türkiye Atıf Dizini
Türk Medline
UDL-EDGE
J- Gate
Idealonline
CABI

OPEN ACCESS POLICY

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge.

Open Access Policy is based on the rules of the Budapest Open Access Initiative (BOAI) <http://www.budapestopenaccessinitiative.org/>. By "open access" to peer-reviewed research literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

CORRESPONDENCE ADDRESS

All correspondence should be directed to the Turkish Journal of Pharmaceutical Sciences Editorial Board

Post Address: Turkish Pharmacists' Association, Mustafa Kemal Mah 2147.Sok No:3 06510 Çankaya/Ankara, TÜRKİYE
Phone: +90 (312) 409 81 00
Fax: +90 (312) 409 81 09
Web Page: <http://turkjps.org>
E-mail: turkjps@gmail.com

PERMISSIONS

Requests for permission to reproduce published material should be sent to the publisher.

Publisher: Erkan Mor
Address: Molla Gürani Mah. Kaçamak Sok. 21/1 Fındıkzade, Fatih, İstanbul, Türkiye
Telephone: +90 212 621 99 25
Fax: +90 212 621 99 27
Web page: <http://www.galenos.com.tr/en>
E-mail: info@galenos.com.tr

ISSUING BODY CORRESPONDING ADDRESS

Issuing Body : Galenos Yayınevi
Address: Molla Gürani Mah. Kaçamak Sk. No: 21/, 34093 İstanbul, Türkiye
Phone: +90 212 621 99 25 Fax: +90 212 621 99 27
E-mail: info@galenos.com.tr

MATERIAL DISCLAIMER

The author(s) is (are) responsible for the articles published in the JOURNAL. The editors, editorial board and publisher do not accept any responsibility for the articles.

This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.



Publisher Contact

Address: Molla Gürani Mah. Kaçamak Sk. No: 21/1
34093 İstanbul, Türkiye
Phone: +90 (530) 177 30 97
E-mail: info@galenos.com.tr | yayin@galenos.com.tr
Web: www.galenos.com.tr | Publisher Certificate Number: 14521

Publication Date: May 2023

E-ISSN: 2148-6247

International scientific journal published bimonthly.



Turkish Journal of PHARMACEUTICAL SCIENCES

INSTRUCTIONS TO AUTHORS

Turkish Journal of Pharmaceutical Sciences journal is published 6 times (February, April, June, August, October, December) per year and publishes the following articles:

- Research articles
- Reviews (only upon the request or consent of the Editorial Board)
- Preliminary results/Short communications/Technical notes/Letters to the Editor in every field of pharmaceutical sciences.

The publication language of the journal is English.

The Turkish Journal of Pharmaceutical Sciences does not charge any article submission or processing charges.

A manuscript will be considered only with the understanding that it is an original contribution that has not been published elsewhere.

The Journal should be abbreviated as "Turk J Pharm Sci" when referenced.

The scientific and ethical liability of the manuscripts belongs to the authors and the copyright of the manuscripts belongs to the Journal. Authors are responsible for the contents of the manuscript and accuracy of the references. All manuscripts submitted for publication must be accompanied by the Copyright Transfer Form [copyright transfer]. Once this form, signed by all the authors, has been submitted, it is understood that neither the manuscript nor the data it contains have been submitted elsewhere or previously published and authors declare the statement of scientific contributions and responsibilities of all authors.

Experimental, clinical and drug studies requiring approval by an ethics committee must be submitted to the JOURNAL with an ethics committee approval report including approval number confirming that the study was conducted in accordance with international agreements and the Declaration of Helsinki (revised 2013) (<http://www.wma.net/en/30publications/10policies/b3/>). The approval of the ethics committee and the fact that informed consent was given by the patients should be indicated in the Materials and Methods section. In experimental animal studies, the authors should indicate that the procedures followed were in accordance with animal rights as per the Guide for the Care and Use of Laboratory Animals (<http://oacu.od.nih.gov/regs/guide/guide.pdf>) and they should obtain animal ethics committee approval.

Authors must provide disclosure/acknowledgment of financial or material support, if any was received, for the current study.

If the article includes any direct or indirect commercial links or if any institution provided material support to the study, authors must state in the cover letter that they have no relationship with the commercial product, drug, pharmaceutical company, etc. concerned; or specify the type of relationship (consultant, other agreements), if any.

Authors must provide a statement on the absence of conflicts of interest among the authors and provide authorship contributions.

All manuscripts submitted to the journal are screened for plagiarism using the 'iThenticate' software. Results indicating plagiarism may result in manuscripts being returned or rejected.

The Review Process

This is an independent international journal based on double-blind peer-review principles. The manuscript is assigned to the Editor-

in-Chief, who reviews the manuscript and makes an initial decision based on manuscript quality and editorial priorities. Manuscripts that pass initial evaluation are sent for external peer review, and the Editor-in-Chief assigns an Associate Editor. The Associate Editor sends the manuscript to at least two reviewers (internal and/or external reviewers). The Associate Editor recommends a decision based on the reviewers' recommendations and returns the manuscript to the Editor-in-Chief. The Editor-in-Chief makes a final decision based on editorial priorities, manuscript quality, and reviewer recommendations. If there are any conflicting recommendations from reviewers, the Editor-in-Chief can assign a new reviewer.

The scientific board guiding the selection of the papers to be published in the Journal consists of elected experts of the Journal and if necessary, selected from national and international authorities. The Editor-in-Chief, Associate Editors may make minor corrections to accepted manuscripts that do not change the main text of the paper.

In case of any suspicion or claim regarding scientific shortcomings or ethical infringement, the Journal reserves the right to submit the manuscript to the supporting institutions or other authorities for investigation. The Journal accepts the responsibility of initiating action but does not undertake any responsibility for an actual investigation or any power of decision.

The Editorial Policies and General Guidelines for manuscript preparation specified below are based on "Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (ICMJE Recommendations)" by the International Committee of Medical Journal Editors (20, archived at <http://www.icmje.org/>).

Preparation of research articles, systematic reviews and meta-analyses must comply with study design guidelines:

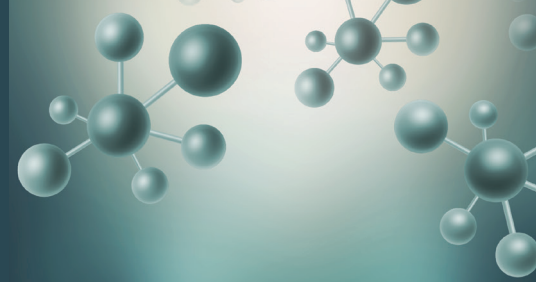
CONSORT statement for randomized controlled trials (Moher D, Schultz KF, Altman D, for the CONSORT Group. The CONSORT statement revised recommendations for improving the quality of reports of parallel group randomized trials. *JAMA* 2001; 285: 1987-91) (<http://www.consort-statement.org/>);

PRISMA statement of preferred reporting items for systematic reviews and meta-analyses (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 2009; 6(7): e1000097.) (<http://www.prisma-statement.org/>);

STARD checklist for the reporting of studies of diagnostic accuracy (Bossuyt PM, Reitsma JB, Bruns DE, Gatsonis CA, Glasziou PP, Irwig LM, et al., for the STARD Group. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. *Ann Intern Med* 2003;138:40-4.) (<http://www.stard-statement.org/>);

STROBE statement, a checklist of items that should be included in reports of observational studies (<http://www.strobe-statement.org/>);

MOOSE guidelines for meta-analysis and systemic reviews of observational studies (Stroup DF, Berlin JA, Morton SC, et al. Meta-analysis of observational studies in epidemiology: a proposal for reporting Meta-analysis of observational Studies in Epidemiology (MOOSE) group. *JAMA* 2000; 283: 2008-12).



Turkish Journal of PHARMACEUTICAL SCIENCES

INSTRUCTIONS TO AUTHORS

GENERAL GUIDELINES

Manuscripts can only be submitted electronically through the Journal Agent website (<http://journalagent.com/tjps/>) after creating an account. This system allows online submission and review.

Format: Manuscripts should be prepared using Microsoft Word, size A4 with 2.5 cm margins on all sides, 12 pt Arial font and 1.5 line spacing.

Abbreviations: Abbreviations should be defined at first mention and used consistently thereafter. Internationally accepted abbreviations should be used; refer to scientific writing guides as necessary.

Cover letter: The cover letter should include statements about manuscript type, single-Journal submission affirmation, conflict of interest statement, sources of outside funding, equipment (if applicable), for original research articles.

ETHICS COMMITTEE APPROVAL

The editorial board and our reviewers systematically ask for ethics committee approval from every research manuscript submitted to the Turkish Journal of Pharmaceutical Sciences. If a submitted manuscript does not have ethical approval, which is necessary for every human or animal experiment as stated in international ethical guidelines, it must be rejected on the first evaluation.

Research involving animals should be conducted with the same rigor as research in humans; the Turkish Journal of Pharmaceutical Sciences asks original approval document to show implements the 3Rs principles. If a study does not have ethics committee approval or authors claim that their study does not need approval, the study is consulted to and evaluated by the editorial board for approval.

SIMILARITY

The Turkish Journal of Pharmaceutical Sciences is routinely looking for similarity index score from every manuscript submitted before evaluation by the editorial board and reviewers. The journal uses iThenticate plagiarism checker software to verify the originality of written work. There is no acceptable similarity index; but, exceptions are made for similarities less than 15 %.

REFERENCES

Authors are solely responsible for the accuracy of all references.

In-text citations: References should be indicated as a superscript immediately after the period/full stop of the relevant sentence. If the author(s) of a reference is/are indicated at the beginning of the sentence, this reference should be written as a superscript immediately after the author's name. If relevant research has been conducted in Türkiye or by Turkish investigators, these studies should be given priority while citing the literature.

Presentations presented in congresses, unpublished manuscripts, theses, Internet addresses, and personal interviews or experiences should not be indicated as references. If such references are used, they should be indicated in parentheses at the end of the relevant sentence in the text, without reference number and written in full, in order to clarify their nature.

References section: References should be numbered consecutively in the order in which they are first mentioned in the text. All authors should be listed regardless of number. The titles of Journals should be abbreviated according to the style used in the Index Medicus.

Reference Format

Journal: Last name(s) of the author(s) and initials, article title, publication title and its original abbreviation, publication date, volume, the inclusive page numbers. Example: Collin JR, Rathbun JE. Involitional entropion: a review with evaluation of a procedure. Arch Ophthalmol. 1978;96:1058-1064.

Book: Last name(s) of the author(s) and initials, book title, edition, place of publication, date of publication and inclusive page numbers of the extract cited.

Example: Herbert L. The Infectious Diseases (1st ed). Philadelphia; Mosby Harcourt; 1999:11;1-8.

Book Chapter: Last name(s) of the author(s) and initials, chapter title, book editors, book title, edition, place of publication, date of publication and inclusive page numbers of the cited piece.

Example: O'Brien TP, Green WR. Periocular Infections. In: Feigin RD, Cherry JD, eds. Textbook of Pediatric Infectious Diseases (4th ed). Philadelphia; W.B. Saunders Company;1998:1273-1278.

Books in which the editor and author are the same person: Last name(s) of the author(s) and initials, chapter title, book editors, book title, edition, place of publication, date of publication and inclusive page numbers of the cited piece. Example: Solcia E, Capella C, Kloppel G. Tumors of the exocrine pancreas. In: Solcia E, Capella C, Kloppel G, eds. Tumors of the Pancreas. 2nd ed. Washington: Armed Forces Institute of Pathology; 1997:145-210.

TABLES, GRAPHICS, FIGURES, AND IMAGES

All visual materials together with their legends should be located on separate pages that follow the main text.

Images: Images (pictures) should be numbered and include a brief title. Permission to reproduce pictures that were published elsewhere must be included. All pictures should be of the highest quality possible, in JPEG format, and at a minimum resolution of 300 dpi.

Tables, Graphics, Figures: All tables, graphics or figures should be enumerated according to their sequence within the text and a brief descriptive caption should be written. Any abbreviations used should be defined in the accompanying legend. Tables in particular should be explanatory and facilitate readers' understanding of the manuscript, and should not repeat data presented in the main text.

MANUSCRIPT TYPES

Original Articles

Clinical research should comprise clinical observation, new techniques or laboratories studies. Original research articles should include title, structured abstract, key words relevant to the content of the article, introduction, materials and methods, results, discussion, study limitations, conclusion references, tables/figures/images and



Turkish Journal of PHARMACEUTICAL SCIENCES

INSTRUCTIONS TO AUTHORS

acknowledgement sections. Title, abstract and key words should be written in both Turkish and English. The manuscript should be formatted in accordance with the above-mentioned guidelines and should not exceed 16 A4 pages.

Title Page: This page should include the title of the manuscript, short title, name(s) of the authors and author information. The following descriptions should be stated in the given order:

1. Title of the manuscript (Turkish and English), as concise and explanatory as possible, including no abbreviations, up to 135 characters
2. Short title (Turkish and English), up to 60 characters
3. Name(s) and surname(s) of the author(s) (without abbreviations and academic titles) and affiliations
4. Name, address, e-mail, phone and fax number of the corresponding author
5. The place and date of scientific meeting in which the manuscript was presented and its abstract published in the abstract book, if applicable

Abstract: A summary of the manuscript should be written in both Turkish and English. References should not be cited in the abstract. Use of abbreviations should be avoided as much as possible; if any abbreviations are used, they must be taken into consideration independently of the abbreviations used in the text. For original articles, the structured abstract should include the following sub-headings:

Objectives: The aim of the study should be clearly stated.

Materials and Methods: The study and standard criteria used should be defined; it should also be indicated whether the study is randomized or not, whether it is retrospective or prospective, and the statistical methods applied should be indicated, if applicable.

Results: The detailed results of the study should be given and the statistical significance level should be indicated.

Conclusion: Should summarize the results of the study, the clinical applicability of the results should be defined, and the favorable and unfavorable aspects should be declared.

Keywords: A list of minimum , but no more than 5 key words must follow the abstract. Key words in English should be consistent with "Medical Subject Headings (MESH)" (www.nlm.nih.gov/mesh/MBrowser.html). Turkish key words should be direct translations of the terms in MESH.

Original research articles should have the following sections:

Introduction: Should consist of a brief explanation of the topic and indicate the objective of the study, supported by information from the literature.

Materials and Methods: The study plan should be clearly described, indicating whether the study is randomized or not, whether it is retrospective or prospective, the number of trials, the characteristics, and the statistical methods used.

Results: The results of the study should be stated, with tables/figures given in numerical order; the results should be evaluated according to the statistical analysis methods applied. See General Guidelines for details about the preparation of visual material.

Discussion: The study results should be discussed in terms of their favorable and unfavorable aspects and they should be compared with the literature. The conclusion of the study should be highlighted.

Study Limitations: Limitations of the study should be discussed. In addition, an evaluation of the implications of the obtained findings/ results for future research should be outlined.

Conclusion: The conclusion of the study should be highlighted.

Acknowledgements: Any technical or financial support or editorial contributions (statistical analysis, English/Turkish evaluation) towards the study should appear at the end of the article.

References: Authors are responsible for the accuracy of the references. See General Guidelines for details about the usage and formatting required.

Review Articles

Review articles can address any aspect of clinical or laboratory pharmaceuticals. Review articles must provide critical analyses of contemporary evidence and provide directions of or future research. Most review articles are commissioned, but other review submissions are also welcome. Before sending a review, discussion with the editor is recommended.

Reviews articles analyze topics in depth, independently and objectively. The first chapter should include the title in Turkish and English, an unstructured summary and key words. Source of all citations should be indicated. The entire text should not exceed 25 pages (A, formatted as specified above).



CONTENTS

Original Articles

- 68 *Olea europaea* L. Leaf Extract Attenuates Temozolomide-Induced Senescence-Associated Secretion Phenotype in Glioblastoma
Melis ERÇELİK, Berrin TUNCA, Seçil AK AKSOY, Çağla TEKİN, Gülçin TEZCAN
- 78 Thermosensitive *In situ* Gelling System for Dermal Drug Delivery of Rutin
Sefa GÖZCÜ, Kerem Heybet POLAT
- 84 Development and Evaluation of a Turkish Scale to Assess Medication Literacy for Adults
Ozgenur TORUN, İlkay MEMİÇ, Pınar AY, Mesut SANCAR, Aysu SELCUK, Ecehan BALTA, Vildan OZCAN, Betül OKUYAN
- 91 Radiolabeling, Quality Control, and Cell Binding Studies of New ^{99m}Tc-Labeled Bisphosphonates: ^{99m}Tc-Ibandronate Sodium
Meliha EKİNCİ, Derya İLEM ÖZDEMİR, Emre ÖZGENÇ, Evren GÜNDOĞDU, Makbule AŞIKOĞLU
- 100 Effect of Oligopeptides-Homologues of the Fragment of ACTH₁₅₋₁₈ on Morphogenetic Markers of Stress in the Adrenal Glands on the Model of Acute Cold Injury in Rats
Olesia KUDINA, Sergii SHTRYGOL', Yulia LARJANOVSKA
- 108 The Effect of Herbal Penetration Enhancers on the Skin Permeability of Mefenamic Acid Through Rat Skin
Anayatollah SALIMI, Sahba SHEYKHOESLAMI
- 115 The Bioequivalence Study of Two Dexketoprofen 25 mg Film-Coated Tablet Formulations in Healthy Males Under Fasting Conditions
Fırat YERLİKAYA, Aslıhan ARSLAN, Hilal BAŞ, Onursal SAĞLAM, Sevim Peri AYTAÇ

Review

- 121 The Role of Pro-Inflammatory Mediator Interleukin-32 in Osteoclast Differentiation
Taha NAZIR, Nida TAHA, Azharul ISLAM, Ishtiaq RABBI, Pervaiz Akhter SHAH

- 126 *Erratum*