

pISSN 1309-6958  
eISSN 2146-1953



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

# EURASIAN JOURNAL OF VETERINARY SCIENCES

Volume: 41 - 2025

pISSN 1309-6958 / eISSN 2146-1953

Volume: 41 - 2025

EURASIAN JOURNAL OF VETERINARY SCIENCES



EURASIAN JOURNAL OF VETERINARY SCIENCES

Volume: 41 - 2025

Selçuk University Faculty of Veterinary Medicine  
Alaeddin Keykubat Campus, 42075, Konya / TÜRKİYE  
Tel: +90.332.223 26 78 Fax: +90.332.241 00 63  
[www.eurasianjvetsci.org](http://www.eurasianjvetsci.org)





# Eurasian Journal of Veterinary Sciences

## Eurasian Journal of Veterinary Sciences

*Eurasian J Vet Sci*  
pISSN 1309-6958  
eISSN 2146-1953

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

***This journal has been indexed and abstracted by following data bases***

### *Abstracting & Indexing*

*TUBITAK - ULAKBIM - TR DIZIN*  
*WEB OF SCIENCE-Zoological Records*  
*EBSCO - HOST Databases*  
*CAB Abstracts*  
*EMBASE*  
*ULRICHSWEB*  
*ERIHPLUS*  
*DOAJ*

### *Data Platforms*

*WorldCat*  
*Google Scholar*  
*ResearchGate*  
*SOBIAD*  
*MIAR*  
*Türkiye Atf Dizini*





# Eurasian Journal of Veterinary Sciences

www.eurasianvetsci.org

The Eurasian Journal of Veterinary Sciences is published throughout the year in a single annual volume (continuous publishing model) and employs a double-blind peer review process, with contributions subject to evaluation by both international and national reviewers.

**On behalf of Selcuk University**  
Prof. Dr. Hüseyin YILMAZ (Rector)

#### Address:

Eurasian Journal of Veterinary Sciences  
Selçuk University Faculty of Veterinary Medicine  
Alaeddin Keykubat Campus, 42075  
Konya / TÜRKİYE  
Tel: +90 332 223 26 78  
Fax: +90 332 241 00 63  
www.eurasianjvetsci.org  
email: ejvs@selcuk.edu.tr

**This journal was published until 2010 as titled:**  
The Journal of the Faculty of Veterinary Medicine  
University of Selcuk

The Journal of Veterinary Sciences  
(Former ISSN: 1011-2057)

#### Aim and Scope

All aspects of Veterinary and Animal Sciences

The journal's open access articles are licensed as Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0). The Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) licence permits sharing, copying, reproduction, and adaptation of the work in any size and format except for commercial use, including remixing, transforming, and building upon the work, provided that proper attribution is given to the original work.



## EDITORIAL BOARD

### EDITOR-IN-CHIEF

**Prof. Dr. Ertan ORUC**, Selçuk University, Faculty of Veterinary Medicine, Department of Pathology, Konya, TÜRKİYE

### MANAGING EDITOR

**Assoc. Prof. Dr. Mehmet Burak ATEŞ**, Selçuk University, Faculty of Veterinary Medicine, Department of Pathology, Konya, TÜRKİYE

### DESIGN EDITORS

**Asst. Prof. Dr. Durmus HATIPOGLU**, Selcuk University, Faculty of Veterinary Medicine, Department of Physiology, Konya, TÜRKİYE

**Asst. Prof. Dr. Beyza Suvarikli ALAN**, Selcuk University, Faculty of Veterinary Medicine, Department of Biochemistry, Konya, TÜRKİYE

**Research Assistant Ayşe EVCİ**, Selcuk University, Faculty of Veterinary Medicine, Department of Parasitology, TÜRKİYE

### LANGUAGE EDITOR

**Prof. Dr. Halis OGUZ**, Selcuk University, Faculty of Veterinary Medicine, Department of Pharmacology and Toxicology Konya, TÜRKİYE

### STATISTICS EDITOR

**Asst. Prof. Dr. Harun YONAR**, Selcuk University, Faculty of Veterinary Medicine, Department of Biostatistics, Konya, TÜRKİYE

### ETHICS EDITOR

**Prof. Dr. Mustafa GARIP**, Selcuk University, Faculty of Veterinary Medicine, Department of Animal Breeding and Husbandry, Konya, TÜRKİYE

### SECTION EDITORS

**Prof. Dr. Mustafa ARICAN**, Selcuk University, Faculty of Veterinary Medicine, Department of Surgery, Konya, TÜRKİYE

**Dr. Fabian E. DIAZ**, Iowa State University, College of Veterinary Medicine, Department of Veterinary Microbiology and Preventive Medicine, USA

**Assoc. Prof. Al-Hafizah Shafia Tehseen GUL**, University of Agriculture Faisalabad, Department of Pathology, PAKISTAN

**Prof. Dr. Nurettin GULSEN**, Selcuk University, Faculty of Veterinary Medicine, Department of Animal Nutrition and Nutritional Diseases, Konya, TÜRKİYE

**Prof. Dr. Umit GURBUZ**, Selcuk University, Faculty of Veterinary Medicine, Department of Food Hygiene and Technology, Konya, TÜRKİYE

**Asst. Prof. Nariste KADIRALIEVA**, Kyrgyz-Turkish Manas University, Faculty of Veterinary Medicine, Department of Histology, KYRGYZSTAN

**Prof. Dr. Hikmet KELES**, Afyon Kocatepe University, Faculty of Veterinary Medicine, Department of Pathology Afyonkarahisar, TÜRKİYE

**Prof. Dr. Abdulkadir KESKİN**, Uludag University, Faculty of Veterinary Medicine, Department of Obstetrics and Gynecology, Bursa, TÜRKİYE

**Prof. Dr. Paola SACCHI**, Turin University, Department of Veterinary Sciences, ITALY

**Prof. Dr. Emrah SUR**, Selcuk University, Faculty of Veterinary Medicine, Department of Histology Konya, TÜRKİYE

**Prof. Dr. Lucjan WITKOWSKI**, Warsaw University of Life Sciences, Faculty of Veterinary Medicine, Diversity of Veterinary Epidemiology and Economics, POLAND

pISSN 1309-6958

eISSN 2146-1953

Pressed Date: 2025



## ADVISORY BOARD

**Abdullah ERYAVUZ, Prof.Dr.**

Afyon Kocatepe University, Faculty of Veterinary Medicine, TÜRKİYE

**Ahmet GUMEN, Prof.Dr.**

Bursa Uludag University, Faculty of Veterinary Medicine, TÜRKİYE

**Alev Gürol Bayraktaroğlu, Prof.Dr.**

Ankara University, Faculty of Veterinary Medicine, TÜRKİYE

**Ali Reha Agaoglu, Prof.Dr.**

Mehmet Akif Ersoy University, Faculty of Veterinary Medicine, TÜRKİYE

**Almuth EINSPANIER, Prof. Dr.**

Leipzig University, Faculty of Veterinary Medicine, GERMANY

**Ana Maria Bravo Del MORAL, Prof. Dr.**

Compostela University, Veterinary Faculty, SPAIN

**Annamaria Nagy, Assoc. Prof.**

University of Veterinary Medicine Budapest, HUNGARY

**Armagan HAYIRLI, Prof.Dr.**

Ataturk University, Faculty of Veterinary Medicine, TÜRKİYE

**Art Donovan, Prof. Dr.**

Florida University, Collage of Veterinary Medicine, USA

**Aykut OZDARENDELI, Prof. Dr.**

Erciyes University, Faculty of Veterinary Medicine, TÜRKİYE

**Barbara Padalino, Assoc. Prof.**

Bologna University, Department of Agri-Food Sciences and Technologies, ITALY

**Bernd Driessen, Prof.Dr.**

Pennsylvania University, School of Veterinary Medicine, USA

**Bernd HOFFMANN, PhD**

Institute of Diagnostic Virology, Friedrich-Loeffler-Institut, GERMANY

**Brian D. Nielsen, Prof.Dr.**

Michigan State University, Collage of Veterinary Medicine, USA

**Bülent Ekiz, Prof.Dr.**

İstanbul-Cerrahpaşa University, Faculty of Veterinary Medicine, TÜRKİYE

**Cheri Johnson, Prof. Dr.**

Michigan State University, Collage of Veterinary Medicine, USA

**Chris W. Rogers, Prof. Dr.**

Massey University, School of Veterinary Science, NEW ZEALAND

**Christine Aurich, Prof. Dr.**

University of Veterinary Medicine, Vienna, AUSTRIA

**Claudio Genchi, Prof. Dr.**

Universita Degli Studi di Milano, Institute of General Veterinary Pathology, ITALY

**David BENNETT, Prof. Dr.**

Glasgow University, Faculty of Veterinary Medicine, SCOTLAND

**Dirk K. Vanderwall, Prof. Dr.**

Utah State University, College of Agriculture and Applied Sciences, USA

**Donald L. Thompson Jr., Prof. Dr.**

Louisiana State University, School of Animal Sciences, USA

**Ebru Onbaşılar, Prof.Dr.**

Ankara University, Faculty of Veterinary Medicine, TÜRKİYE

**Elizabeth SANTIN, Assoc Prof.**

Parana Federal University, Veterinary Medicine, BRASIL

**Enver Yazar, Prof. Dr.**

Selcuk University, Faculty of Veterinary Medicine, TÜRKİYE

**Ertugrul KILIC, Prof.Dr.**

Medipol University, Faculty of Medicine, TÜRKİYE

**Fouad Kasım MOHAMMAD, Prof. Dr.**

Mosul University College of Veterinary Medicine, IRAQ

**Giovanni RE, Prof. Dr.**

Turin University, Faculty of Veterinary Medicine, ITALY

**Giuseppe Piccione, DVM**

Messina University, Department of Veterinary Sciences, ITALY

**Guilherme C. Ferraz, Assoc. Prof.**

São Paulo State University, School of Veterinary Medicine and Animal Science, BRAZIL

**Guillermo COUTO, Prof. Dr.**

Ohio State University, Faculty of Veterinary Medicine, USA

**Hafez Mohamed HAFEZ, Prof. Dr.**

Freie University, Faculty of Veterinary Medicine, GERMANY

**Haluk Çelik, Prof.Dr.**

Ankara University, Faculty of Veterinary Medicine, TÜRKİYE

**Hasan Batmaz, Prof.Dr.**

Bursa Uludag University, Faculty of Veterinary Medicine, TÜRKİYE

**Heiner NIEMANN, Prof. Dr.**

Institute of Friederich Löffler, Mariensee, GERMANY

**Helio Autran de Moraes, Prof. Dr.**

Oregon State University, Carlson College of Veterinary Medicine, USA

**Ilhami CELIK, Prof.Dr.**

Selcuk University, Faculty of Veterinary Medicine, TÜRKİYE

**Ken Nordlund, Prof. Dr.**

Wisconsin University, School of Veterinary Medicine, USA

**Kenneth H. McKeever, PhD**

Rutgers University, School of Environmental and Bio

**Ömer BEŞALTI, Prof.Dr.**

Ankara University, Faculty of Veterinary Medicine, TÜRKİYE

**Kevin H. Kline, Prof.Dr.**

Illinois at Urbana-Champaign University, College of Agricultural, Consumer and Environmental Sciences, USA

**Laeq Akbar LODHI, PhD**

University of Agriculture, Faculty of Veterinary Science, PAKISTAN

**Linda A. Dahlgren, Prof. Dr.**

Maryland University, College of Veterinary Medicine, USA

**Lutz S. Göhring, Prof.Dr.**

Kentucky University, College of Agriculture, Food and Environment, USA

**Manabu Nemoto, PhD**

Japan Racing Association, Equine Research Institute, JAPAN

**Marco A. Alvarenga, Prof. Dr.**

São Paulo State University, School of Veterinary Medicine and Animal Science, BRAZIL

**Marco A. Gioso, Assoc. Prof.**

São Paulo State University, School of Veterinary Medicine and Animal Science, BRAZIL

**Marcus G. Doherr, Prof.Dr.**

Freie Universität Berlin, School of Veterinary Medicine, GERMANY

**Markos Tibbo, PhD**

Food and Agriculture Organization of the United Nations (FAO), Subregional Office for the Gulf Cooperation Council States and Yemen, UNITED ARAB EMIRATES

**Martin K. Nielsen, Prof. Dr.**

Kentucky University, College of Agriculture, Food and Environment, USA

**Mehmet Borgia Tirpan, Associate Prof.**

Ankara University, Faculty of Veterinary Medicine, TÜRKİYE

**Mehmet CALICIOGLU, Prof. Dr.**

Firat University, Faculty of Veterinary Medicine, TÜRKİYE

**Meike Mevissen, Prof. Dr.**

Berne University, Faculty of Veterinary Medicine, SWITZERLAND

**Micaela Sgorbini, Assoc. Prof.**

Pisa University, Department of Veterinary Sciences, ITALY

**Muammer ELMAS, Prof. Dr.**

Selcuk University, Faculty of Veterinary Medicine, TÜRKİYE

**Mustafa Atasever, Prof.Dr.**

Atatürk University, Faculty of Veterinary Medicine, TÜRKİYE

**Mustafa HASOKSUZ, Prof.Dr.**

Istanbul University, Faculty of Veterinary Medicine, TÜRKİYE

**Nathalie Kirschvin, Prof. Dr.**

Namur University, Research Institute for Life Sciences, BELGIUM



**Osman ERGANIS, Prof.Dr.**

Selcuk University, Faculty of Veterinary Medicine,  
TÜRKİYE

**Patrick M. McCue, Prof.Dr.**

Colorado State University, College of Veterinary Medicine and Biomedical Sciences, USA

**Paul Walz, Prof. Dr.**

Auburn University, College of Veterinary Medicine, USA

**Peter Erickson, Prof. Dr.**

New Hampshire University, Collage of Life Science and Agriculture, USA

**Peter J. Timoney, Prof.Dr.**

Kentucky University, College of Agriculture, Food and Environment, USA

**Ray Dillon, Prof. Dr.**

Auburn University, College of Veterinary Medicine, USA

**Sandra GOERICKE-PESCH, Prof. Dr.**

Copenhagen University, Vet Reprod, Frederiksberg, DENMARK

**Scott Fitzgerald, Prof. Dr.**

Michigan State University, Collage of Veterinary Medicine, USA

**Şinasi Umer, Prof.Dr.**

Ondokuz Mayıs University, Faculty of Veterinary Medicine, TÜRKİYE

**Suat ERDOGAN, Prof.Dr.**

Trakya University, Faculty of Medicine, TÜRKİYE

**Şükrü Tonbak, Prof.Dr.**

Firat University, Faculty of Veterinary Medicine, TÜRKİYE

**Suleyman KAPLAN, Prof.Dr.**

Ondokuz Mayıs University, Faculty of Medicine, TÜRKİYE

**Tahir Kardeş, Associate Prof.**

Aksaray University, Faculty of Veterinary Medicine, TÜRKİYE

**Thomas J. Divers, DVM**

Cornell University, College of Veterinary Medicine, USA

**Thomas Tobin, Prof. Dr.**

Kentucky University, College of Agriculture, Food and Environment, USA

**Turan Civelek, Prof.Dr.**

Afyon Kocatepe University, Faculty of Veterinary Medicine, TÜRKİYE

**Willem Back, Asst. Prof**

Utrecht University, Faculty of Veterinary Medicine, NETHERLANDS

**William W. THATCHER, Prof. Dr.**

Florida University, Collage of Veterinary Medicine, USA

**Wittek Thomas, Prof. Dr.**

Wien Veterinary Medicine University, Wien, AUSTRIA

