

ISSN 1644-0730

# **ACTA SCIENTIARUM POLONORUM**

---

Scientific journal (quarterly), issued since 2002,  
whose founder and advocate is the Conference of the Rectors of Universities  
of Life Sciences

Czasopismo naukowe (kwartalnik), ukazujące się od 2002 roku,  
którego założycielem i patronem jest Konferencja Rektorów Uczelni Rolniczych

## **Technologia Alimentaria**

Food Science and Human Nutrition

Technologia Żywności i Żywienia

13(4) 2014

November – December



Bydgoszcz Kraków Lublin Olsztyn  
Poznań Siedlce Szczecin Warszawa Wrocław

ACTA Scientiarum Polonorum Technologia Alimentaria was founded by all Polish Agricultural Universities in 2001 and it is published by Poznań University of Life Sciences Press.

The papers are published in English only, in four issues yearly.

This journal is the open access and non-profit enterprise. The published papers may be collected, read and downloaded free of charge – with Author's rights reserved.

## **Aim and scope**

The original scientific peer-reviewed papers published in ACTA Scientiarum Polonorum Technologia Alimentaria journal cover main aspects of food science from raw materials properties through processing aspects up to quality of final products and their nutritional properties, usability and dietetics.

It involves fundamental and applied research, including selected subjects of food science and human nutrition with pointing out at their interface.

All of these problems can be put into following topics:

### **Food Technology**

- influence of all processing parameters on food quality and safety
- systems and methods of controlling and modification of food properties
- food biotechnology and microbiology
- any subject at the interface between food processing and food quality and human nutrition (paper connected with these technological problems are preferred)

### **Functional Food**

- functional foods development
- production of novel food
- effects of processing and storage on the stability and biological activity of bioactive food components and their metabolites

### **Human Nutrition**

- clinical tests of foods
- consumer preferences of standard and novel food
- diet and nutritional status assessment
- nutritional and health impacts of foods and food components

### **Abstracting/indexing**

Medline, Scopus, PubMed, EBSCO, Food Science and Technology Abstracts®, CAB International, Chemical Abstracts Service, Index Copernicus, Ulrich's Database, Directory of Open Access Journals, Agro-Librex, Agro-Agen.

## Executive Board of Acta Scientiarum Polonorum

Jerzy Sobota (Wrocław) – *chairman*, Józef Bieniek (Krakow), Barbara Gąsiorowska (Siedlce), Wiesław Nagórko (Warsaw), Janusz Prusiński (Bydgoszcz), Ewa Sobecka (Szczecin), Krzysztof Szkucik (Lublin), Waldemar Uchman (Poznań), Ryszard Żróbek (Olsztyn)

## Scientific Board of Acta Scientiarum Polonorum

### Editorial Chief

#### Waldemar Uchman

Poznań University of Life Sciences,  
Poland  
chairman@food.actapol.net  
phone/fax: +48 61 848 7808

### Co-editors

#### Zofia Lisiewska

*Food Technology*  
University of Agriculture in Krakow,  
Poland  
rrlisiew@cyf-kr.edu.pl  
phone: +48 12 662 4756

#### Julita Regula

*Functional Food*  
Poznań University of Life Sciences,  
Poland  
jumar@up.poznan.pl  
phone: +48 61 848 7339

#### Jarosław Walkowiak

*Human Nutrition*  
Poznań University of Medical Sciences,  
Poland  
jarwalk@am.poznan.pl  
phone: +48 61 849 1437

### Members

Maria Daniel vaz de Almeida, University  
of Porto, **Portugal**

Bhaskar C. Behera  
Agharkar Research Institute, **India**

Zbigniew Dolatowski  
University of Life Sciences in Lublin,  
**Poland**

Jerzy Dziuba  
University of Warmia and Mazury  
in Olsztyn, **Poland**

Sylvian Guyot  
INRA Centre de Rennes, **France**

Karl Heinz Herzig  
University of Oulu, **Finland**

Berthold Victor Koletzko  
University of Munich, Medical Centre,  
**Germany**

Zbigniew Krejpcio  
Poznań University of Life Sciences,  
**Poland**

Andrea Laukova  
Slovak Academy of Sciences,  
**Slovakia**

Andrzej Lenart  
Warsaw University of Life Sciences –  
SGGW, **Poland**

Carlos Lifschitz  
Italian Hospital of Buenos Aires,  
**Argentina**

Abdalbasit Adam Mariod  
King Abdulaziz University Jeddah,  
**Saudi Arabia**

Paul Edward Mozdziak  
North Carolina State University, Raleigh,  
**United States**

Jan Oszmiański  
Wrocław University of Environmental  
and Life Sciences, **Poland**

Semih Ötles  
Ege University, **Turkey**

Werner Praznik  
University of Natural Resources  
and Applied Life Science, **Austria**

Mikołaj Protasowicki  
West Pomeranian University  
of Technology, Szczecin, **Poland**

Roman Przybylski  
University of Lethbridge, **Canada**

Eddy Robberecht  
Universiteit Gent, Ghent, **Belgium**

Kazim Sahin  
Firat University, **Turkey**

Alexander Shleikin  
St. Petersburg State University, **Russia**

Martin Stern  
Universitätsklinikum Tübingen  
Medizinische Fakultät, Tübingen,  
**Germany**

Diana Thomas  
University of Sydney, **Australia**

## Contact

### Chairman

Waldemar Uchman – chairman@food.actapol.net, phone: +48 61 848 7339

### Article status

Joanna Suliburska – secretary@food.actapol.net, phone: +48 61 848 7334

### Publisher contact person

Lucyna Borowczyk – lbor@up.poznan.pl, phone: +48 61 848 7807

## Publisher

Poznań University of Life Sciences Press

Witosa 45, 61-693 Poznań, Poland

phone: +48 61 848 7776, fax: +48 61 848 7808

e-mail: wydawnictwo@up.poznan.pl, <http://www.wydawnictwo.up-poznan.net>

## Managing Team

Joanna Suliburska – assistant editor, secretary@food.actapol.net, fax: +48 61 848 7334

Lucyna Borowczyk – text editor, lbor@up.poznan.pl, phone: +48 61 848 7807, fax: +48 61 848 7808

Hanna Chudzik – statistics consultant

Małgorzata Kapuścińska – English language consultant

Stanisław Tuchołka – computer typesetting

The journal Acta Scientiarum Polonorum Technologia Alimentaria has received in 2014 a grant of Ministry of Science and Higher Education for funding of projects covering the activities to promote and popularize the science.

ISSN 1644-0730 (print) ISSN 1889-9594 (online)

Edition 100 copies. 10.2 publisher's sheets.

Printed on acid free paper (Cyclus 80 g/m<sup>2</sup>)

© Copyright by Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu

Print: Zakład Graficzny Uniwersytetu Przyrodniczego w Poznaniu  
Wojska Polskiego 67, 60-625 Poznań