

## Special Issue

# Lipids and Fatty Acids: Their Interrelationship with Metabolic Syndrome

### Message from the Guest Editors

Metabolic syndrome is a multifactorial condition characterized by central obesity, insulin resistance, hypertension, and dyslipidemia, all of which increase the risk of type 2 diabetes and cardiovascular disease.

Lipids and fatty acids play a central role in the pathophysiology of metabolic syndrome. Elevated circulating triglycerides, increased free fatty acids, and altered lipoprotein metabolism contribute to insulin resistance and endothelial dysfunction. Saturated fatty acids promote inflammation, oxidative stress, and ectopic fat deposition, whereas polyunsaturated fatty acids, particularly omega-3, exert protective effects by improving lipid profiles, reducing inflammation, and enhancing insulin sensitivity. Dysregulation in the lipid metabolism, including impaired HDL function and increased small and dense LDL particles, further amplifies cardiometabolic risk. Understanding the mechanistic links between lipid species, fatty acid composition, and metabolic pathways provides insight into targeted therapeutic strategies. Dietary interventions and pharmacological modulation of the lipid metabolism remain promising approaches to prevent and manage metabolic syndrome.

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### Guest Editors

Dr. Mandana Pahlavani

1. Department of Nutrition and Food Sciences, Texas Woman's University, Dallas, TX, USA

2. Department of Internal Medicine, Division of Cardiology, UT Southwestern Medical Center, Dallas, TX, USA

Prof. Dr. Haifei Shi

Department of Biology, Miami University, Oxford, OH, USA

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### Deadline for manuscript submissions

25 May 2026



## Nutrients

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Impact Factor 5.0  
CiteScore 9.1  
Indexed in PubMed



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*Nutrients*  
Editorial Office  
MDPI, Grosspeteranlage 5  
4052 Basel, Switzerland  
Tel: +41 61 683 77 34  
[nutrients@mdpi.com](mailto:nutrients@mdpi.com)

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*Nutrients* is an on-line open access journal that was first published in 2009. *Nutrients* adheres to rigorous peer-review and editorial processes and publishes only high quality manuscripts that address important issues related to the impacts of nutrients on human health. The Impact Factor of *Nutrients* has risen rapidly since its establishment and it is now ranked in the first quartile of journals publishing in the field of nutrition and dietetics research.

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### Editors-in-Chief

Prof. Dr. Lluís Serra-Majem

1. Centro de Investigación Biomédica en Red Fisiopatología de la Obesidad y la Nutrición (CIBEROBN), Institute of Health Carlos III, 28029 Madrid, Spain
2. Research Institute of Biomedical and Health Sciences (IUIBS), University of Las Palmas de Gran Canaria, 35001 Las Palmas, Spain
3. Preventive Medicine Service, Centro Hospitalario Universitario Insular Materno Infantil (CHUIMI), Canarian Health Service, 35016 Las Palmas, Spain

Prof. Dr. Maria Luz Fernandez

Department of Nutritional Sciences, University of Connecticut, Storrs, CT 06269, USA

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