



Special Issue on **AMPK: New Therapeutic Target for Natural Compounds in the Prevention of Oxidative Stress and Aging Diseases**

CALL FOR PAPERS

AMP-activated protein kinase (AMPK) is a serine/threonine protein kinase that has the function of maintaining the balance between ATP production and consumption in most eukaryotic cells. It plays a relevant role in regulating cellular metabolism and preserving cellular energy homeostasis and is involved in many other cellular processes as well as metabolic ones, including cell cycle regulation and endothelial and vascular relaxation. Recently, the effects of naturally occurring compounds able to prevent and treat diseases through AMPK activation have attracted the attention of many researchers. Among such natural compounds, polyphenols have been proposed as activators of AMPK signaling, protecting against oxidative damage by improving antioxidant response and mitochondrial function.

The role of natural compounds on AMPK pathway as well as on the regulation of the processes associated with it (regulation of whole-body energy balance, metabolic disorders such as obesity and diabetes, endothelial function, cancer, and cardiovascular diseases) is a new field that currently requires many studies to understand and describe their action mainly based on their molecular and genetic mechanism.

We invite investigators to contribute original research articles as well as review articles that seek to address the most recent findings concerning the mechanisms through which different natural compounds affect the AMPK pathway in healthy and pathological *in vitro* and *in vivo* models, paying particular attention to molecular mechanisms involved in low-prevalence diseases, as well as diabetes, obesity, metabolic syndrome, cardiovascular disease, and cancer.

Potential topics include, but are not limited to:

- ▶ AMPK in low-prevalence diseases: ataxia-telangiectasia, muscular dystrophies, mitochondrial diseases, and other diseases (PJS, Wolff-Parkinson-White Syndrome, etc.)
- ▶ Molecular and cellular mechanisms involved in improving antioxidant responses mediated by AMPK
- ▶ Redox-related molecular mechanisms of modulation of AMPK activity
- ▶ Relationship between natural compounds, AMPK, and aging-associated diseases: controversies and potential therapeutic implications
- ▶ Role of AMPK and natural bioactive compounds in regulating carbohydrate, lipid, and protein metabolism
- ▶ Effect of AMPK and natural compounds on cell polarity, growth, and apoptosis in normal and pathological condition
- ▶ Molecular role of AMPK in mitochondrial biogenesis in health and diseases
- ▶ Control of inflammation by AMPK: new compounds
- ▶ Physical activity, nutrition, and AMPK
- ▶ Clinical trials for AMPK activators

Lead Guest Editor

José M. Alvarez-Suarez, Universidad de Las Américas, Quito, Ecuador
jose.alvarez@udla.edu.ec

Guest Editors

Mario D. Cordero, Universidad de Sevilla, Sevilla, Spain
mdcormor@us.es

Francesca Giampieri, Università Politecnica delle Marche, Ancona, Italy
f.giampieri@univpm.it

Elisabet Alcocer-Gómez, University of Sevilla, Sevilla, Spain
agelisabet@gmail.com

David Cotán, Pablo de Olavide University, Sevilla, Spain
lobolivares@hotmail.com

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