



Special Issue on **Antioxidant, Anti-Inflammatory, and Microbial-Modulating Activities of Nutraceuticals and Functional Foods**

CALL FOR PAPERS

Oxidative stress is defined as the imbalance between reactive oxygen species (ROS) formation and enzymatic and nonenzymatic antioxidant defense favoring the former. Enhanced oxidative stress occurs when ROS formation is increased by an array of exogenous and endogenous factors, for example, smoking, exposure to pollution, unhealthy diet, and chronic/low grade inflammation, when the antioxidant defense capacity is compromised or both. Enhanced oxidative stress has been appreciated for the contribution to the pathogenesis of noncommunicable diseases (i.e. cardiovascular disease, metabolic syndrome, cancer, and brain disorders). In addition to attacking susceptible macromolecules, protein, DNA, and lipid, ROS modulate the expression of genes that are regulated by nuclear factor-erythroid 2-related factor 2 (Nrf2) and nuclear factor-kappa B (NF- κ B). For example, Nrf2 stimulates the transcription of antioxidant enzymes through the antioxidant responsive elements (ARE) and the activation of NF- κ B elicits the gene expression of inflammatory cytokines. Therefore, there is a concerted modulation of Nrf2 and NF- κ B in inflammation and oxidative stress. In this context, many nutraceuticals exert their anti-inflammatory and antioxidant effects through the inhibition of NF- κ B and the activation of Nrf2, respectively.

Further, one of the most promising areas for the development of functional foods lies in modulation of the immune system by the use of probiotics, prebiotics, and synbiotics. Particularly, research examining the interactions occurring between probiotics, prebiotics, and nutraceuticals at the levels of the gut microbiota and of the Gut Associated Lymphoid Tissue (GALT) is emerging. These interactions are relevant in the design of nutraceuticals and functional food for the prevention of noncommunicable diseases associated with dysbiosis, oxidative stress, and chronic low-grade inflammation.

To this special issue, we invite investigators to contribute original research articles based on both preclinical and clinical data, comprehensive reviews, and perspective articles aiming to evaluate the antioxidant and anti-inflammatory activities of nutraceuticals and functional foods, as well as the functional quality assessment of both natural and industrially processed foods.

Potential topics include, but are not limited to:

- ▶ Human, animal, or in vitro studies in relation to oxidative stress and inflammation: the effects of nutraceuticals, natural, and industrially processed foods, probiotics, prebiotics, and synbiotics
- ▶ Molecular mechanisms of antioxidant and anti-inflammatory effects of nutraceuticals
- ▶ Recent insights into the relationship between probiotics, prebiotics, and nutraceuticals in the area of molecular and cellular mechanisms, genetic mechanisms, and nutrition and immune modulation
- ▶ Human, animal, or in vitro studies evaluating the effects of food, functional foods, and nutraceuticals on the host-microbiota (microbiome) interactions
- ▶ *In vivo* effects of food, functional foods, and nutraceuticals on the markers of oxidative stress and inflammation
- ▶ Characterization of novel functional foods, natural products, and phytochemical extracts in relation to oxidative stress and inflammation

Authors can submit their manuscripts via the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/omcl/aamm/>.

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