

Special Issue

Antioxidant Defenses and Oxidative Stress Management in Aquaculture

Message from the Guest Editor

Aquaculture systems face increasing environmental stressors (e.g., hypoxia, poor water quality), disrupting redox homeostasis and causing oxidative stress in farmed species. This leads to metabolic dysfunction, immune impairment, and production losses. While synthetic antioxidants are commonly used, natural alternatives (e.g., polyphenols, microalgal extracts) offer safer, sustainable solutions. This Special Issue explores antioxidant defenses—both endogenous (e.g., SOD, catalase) and exogenous (dietary antioxidants)—in mitigating oxidative stress. Key topics include:

- Novel antioxidant sources (plant by-products, microbial metabolites);
- Cellular and organismal responses to oxidative stress;
- Sustainable strategies (nutritional programming, genetic selection);
- Biomarkers for monitoring oxidative stress;
- Advanced methods (multi-omics, AI-assisted analysis).

We invite original research and reviews to advance sustainable aquaculture practices, enhancing animal health and productivity.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

It has been recognized in medical sciences that in order to prevent adverse effects of “oxidative stress” a balance exists between prooxidants and antioxidants in living systems. Imbalances are found in a variety of diseases and chronic health situations. Our journal *Antioxidants* serves as an authoritative source of information on current topics of research in the area of oxidative stress and antioxidant defense systems. The future is bright for antioxidant research and since 2012, *Antioxidants* has become a key forum for researchers to bring their findings to the forefront.

Editor-in-Chief

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