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## Antioxidants in Animal Production, Reproduction, Health and Welfare

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The exposure of animals to environmental stresses (restraint, bad housing conditions, irradiation, pollution, diseases, and heat stress) and endogenous stresses (metabolic and physiological disorders) can seriously disrupt the redox homeostasis, leading to impairments in animals' health and overall performance. Under these circumstances, the self-antioxidant defense system may not be enough to neutralize ROS effects. In this context, the utilization of an exogenous source of antioxidants, mainly dietary sources, may present an effective and cost-effective solution. There are a plethora of substances, either naturally occurring or synthesized (organic acids, minerals, vitamins, hormones, and specific feed additives originating from plants such as essential oils and polyphenols), known for their antioxidant activity, that can be used to maintain adequate redox status in animals in order to preserve their well-being and/or productivity. This area of research still needs more investigations in order to clearly elucidate the effective antioxidant substances that could be used in practical applications, with an emphasis on their biological mechanisms during different physiological conditions and health statuses. We intend to bring together current research concerning the role of antioxidant substances either from natural sources or those synthesized for improving animal production, reproduction, health, and welfare.

