

## Documents

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**Reactive Oxygen Species and Antioxidant System in Selected Skin Disorders**

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**Abstract**

The skin has a solid protective system that includes the stratum corneum as the primary barrier and a complete antioxidant defence system to maintain the skin's normal redox homeostasis. The epidermal and dermal cells are continuously exposed to physiological levels of reactive oxygen species (ROS) originating from cellular metabolic activities. Environmental insults, such as ultraviolet (UV) rays and air pollutants, also generate ROS that can contribute to structural damage of the skin. The antioxidant defence system ensures that the ROS level remains within the safe limit. In certain skin disorders, oxidative stress plays an important role, and there is an established interplay between oxidative stress and inflammation in the development of the condition. Lower levels of skin antioxidants indicate that oxidative stress may mediate the pathogenesis of the disorder. Accordingly, the total antioxidant level was also found to be lower in individuals with skin disorders in individuals with normal skin conditions. This review attempts to summarise the skin oxidant sources and antioxidant system. In addition, both skin and total antioxidant status of individuals with psoriasis, acne vulgaris, vitiligo and atopic dermatitis (AD), as well as their associations with the progression of these disorders will be reviewed. © Penerbit Universiti Sains Malaysia, 2023.

**Author Keywords**

acne vulgaris; antioxidant; atopic dermatitis; oxidative stress; psoriasis; skin; vitiligo

**Index Keywords**

acyl coenzyme A oxidase, alpha tocopherol, ascorbic acid, beta carotene, carotenoid, catalase, CD47 antigen, ferredoxin nicotinamide adenine dinucleotide phosphate reductase, food allergen, glutathione, glutathione peroxidase, glutathione reductase, intercellular adhesion molecule 1, interleukin 13, interleukin 17, interleukin 1beta, interleukin 22, interleukin 4, interleukin 6, lycopene, malonaldehyde, reactive oxygen metabolite, reduced nicotinamide adenine dinucleotide phosphate oxidase, superoxide, superoxide dismutase, transcription factor Nrf2, tumor necrosis factor, xanthophyll, zeaxanthin; acne vulgaris, air pollution, atopic dermatitis, cell differentiation, cell proliferation, DNA damage, electron transport, endoplasmic reticulum, human, lipid peroxidation, MAPK signaling, oxidation reduction reaction, oxidative stress, physiological stress, protein carbonylation, protein folding, psoriasis, Review, skin cancer, skin disease, stratum corneum, ultraviolet radiation, vitiligo

**Chemicals/CAS**

acyl coenzyme A oxidase, 61116-22-1; alpha tocopherol, 1406-18-4, 1406-70-8, 52225-20-4, 58-95-7, 59-02-9; ascorbic acid, 134-03-2, 15421-15-5, 50-81-7; beta carotene, 7235-40-7; catalase, 9001-05-2; ferredoxin nicotinamide adenine dinucleotide phosphate reductase, 56367-57-8, 9029-33-8; glutathione, 70-18-8; glutathione peroxidase, 9013-66-5; glutathione reductase, 9001-48-3; intercellular adhesion molecule 1, 126547-89-5; interleukin 13, 148157-34-0; interleukin 22, 457106-70-6, 478219-35-1, 554460-75-2; lycopene, 502-65-8; malonaldehyde, 542-78-9; reduced nicotinamide adenine dinucleotide phosphate oxidase, 9032-22-8; superoxide, 11062-77-4; superoxide dismutase, 37294-21-6, 9016-01-7, 9054-89-1; xanthophyll, 127-40-2, 52842-48-5; zeaxanthin, 144-68-3

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