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Perspective

Oxygen Species and its Related Diseases in Mitochondrial Lipids

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DESCRIPTION

Lipids, which make up cellular membrane substances in cell biology. The scarcity of information on these vital things most likely reflects the difficulty of investigating and comprehending their biological functions, rather than indicating a lack of significance. Moreover the lipid content of biological membranes has a significant influence on a wide range of cellular functions. Lipid categories on mitochondrial function particularly bioenergetics in health and sickness. Aging has been related to various neurodegenerative disorders that when cellular and molecular damage accumulates may lead to cell malfunction and organ failure. Human ageing is associated with an increased chance of developing cancer, neurological, cardiovascular and metabolic problems.

Understanding the molecular basis of ageing and related disorders in Organelle the hub of oxidative metabolism and the primary site of Reactive Oxygen Species (ROS) generation play critical roles in both health and disease development. Aging has also been linked to a decrease in antioxidant defense efficacy, which, when combined with increased ROS generation, adds significantly to the development of a cellular oxidative state. Initially disrupt activity of enzymes by spontaneous group oxidation but can eventually lead to a more severe change in biomolecule structure and integrity. Mitochondria are regarded as a significant source of ROS, which, when abundantly created under diseased conditions can cause intracellular oxidative stress resulting in the aforementioned damage. ROS overproduction in cells can affect tissues as well as organ function resulting in various diseases or even the organism's premature death. Several degenerative illnesses, especially proteinopathies including such Alzheimer's and Parkinson's disease, are characterized by the accumulation of aggregating proteins in the shape of insoluble fibrils or plaques. The diverse molecular pathways that finally culminate in mitochondrial failure during dementia have received considerable attention, although they remain poorly understood.

Disorders in nuclear fission and fusion, mitophagy, mitochondrial oxidative and mitochondria energy metabolism on the other hand related to cell death. The phospholipid microenvironment within mitochondria influences these processes because in addition to cellular membrane the recruitment and activity of many proteins are heavily regulated by the lipid composition. Neurological disorders are a vast and diverse collection of conditions that are characterised by characterized by loss of neurological function or structure in specific areas of the brain eventually leading to cell death. Proteinopathies are a subclass of illnesses that include amyotrophic lateral sclerosis, also known as Alzheimer's Disease (AD). Misfolding and accumulation of different proteins result in the production and deposition of insoluble fibrils. In contrast to the cell membrane, lipid are not important components of mitochondria. While these lipids are responsible for the production of microdomains in the plasma membrane, it is unknown to extent mitochondrial membranes create lipid domains similar to 'lipid rafts' formed at the cell surface. Some lipids classes segregate to create curvature or orientation regions. The lipid in critical metabolic organs is altered by metabolic disturbances. In mice and humans the progression of nonalcoholic fatty liver disease is associated with significant alterations in cellular lipedema. Despite the fact that certain research have related these lipid profiles to alterations in mitochondrial function.

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