# The Intricate Nexus: The Relationship between Oxidative Stress and Inflammation in Obesity

Malaysian Journal of Medicine and Health Sciences • Review • 2025 • DOI: 10.47836/mjmhs.21.5.40

Hanifah, Nabihah Abu [a] ; Salam, Sirajudeen Kuttulebbai Naina Mohamed [b] ; Affandi, Khairunisa Ahmad [a] ; Abdullah, Nor Zamzila [a] ; Buyong, Zunariah [b] ; +2 authors

[a] Department of Pathology and Laboratory Medicine, Kulliyyah of Medicine, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Pahang, Kuantan, 25200, Malaysia

Show all information



## Abstract

Obesity, defined as excessive fat storage, is linked to chronic low-grade inflammation and increased reactive oxygen species (ROS) generation. Inflammatory cells, such as neutrophils and macrophages, produce ROS during oxidative bursts to attack infections. However, in obese people, increased ROS generation in hypertrophic and hypoxic adipose tissue maintains a chronic inflammatory state. ROS and Damage-Associated Molecular Patterns (DAMPs) generated by stressed adipocytes activate inflammatory pathways and transcription factors, including nuclear factor-kappa B (NF-κB). Identifying such mechanisms highlights the possibility of targeting ROS generation and inflammatory pathways to reduce chronic inflammation and enhance metabolic health in obesity. This review seeks to clarify the complex link between oxidative stress, inflammation, and obesity. © 2025 Universiti Putra Malaysia Press. All rights reserved.

## Author keywords

Inflammation; Inflammatory cytokine; Obesity; Oxidative stress; Reactive oxygen species

## Corresponding authors

| | |
|---|---|
| Corresponding author | S.K.N.M. Salam |
| Affiliation | Department of Basic Medical Sciences, Kulliyyah of Medicine, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Pahang, Kuantan, 25200, Malaysia |
| Email address | knssiraj@iium.edu.my |