

Name of Journal: *World Journal of Hepatology*

Manuscript NO: 53791

Manuscript Type: REVIEW

Oxidative stress in alcohol-related liver disease

Tan HK *et al.* Oxidative stress in alcohol-related liver disease

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Abstract

Alcohol consumption is one of the leading causes of the global burden of disease and results in high healthcare and economic costs. Heavy alcohol misuse leads to alcohol-related liver disease, which is responsible for a significant proportion of alcohol-attributable deaths globally. Other than reducing alcohol consumption, there are currently no effective treatments for alcohol-related liver disease. Oxidative stress refers to an imbalance in the production and elimination of reactive oxygen species and antioxidants. It

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Oxidative stress in alcohol-related liver disease



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oxidative stress. The Inflammatory Response Alcohol-induced oxidative stress contributes to the **inflam-mation** that accompanies **severe ALD**. **White blood cells** called neutrophils travel through the bloodstream to areas of **liver cell damage**, where they produce superoxide and release it into the surrounding tissue. This **superoxide** can

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Oxidative stress and alcoholic liver disease.

<https://www.ncbi.nlm.nih.gov/pubmed/19387914>

Acute and chronic ethanol treatment increases the production of ROS, lowers cellular antioxidant levels, and enhances **oxidative stress** in many tissues, especially the **liver**. **Ethanol-induced oxidative stress** plays a major role in the mechanisms by which ethanol produces **liver injury**.

Cited by: 301

Author: Defeng Wu, Arthur I Cederbaum

Publish Year: 2009

Oxidative stress in alcoholic liver disease: Role of NADPH ...

<https://onlinelibrary.wiley.com/doi/10.1111/j.1440-1746.2007.05277.x>

Among the multiple factors involved in the process of **alcohol-induced liver injury**, a crucial role is played by **oxidative stress**. Several mechanisms during **ethanol metabolism** result in **reactive oxygen species** (ROS) production.

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Author: Samuele De Minicis, David A Brenner

Publish Year: 2008

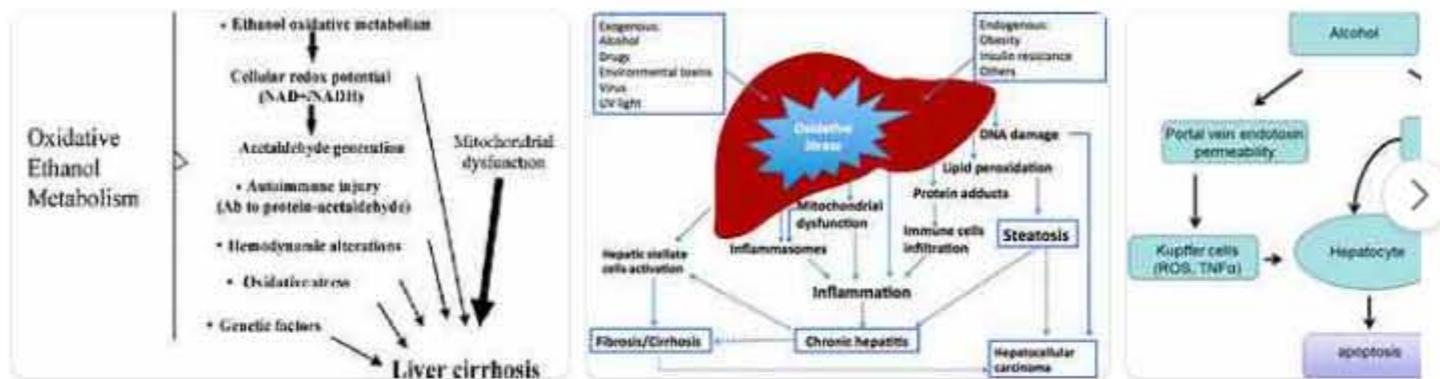
Alcohol-Related Liver Disease - an overview ...

<https://www.sciencedirect.com/topics/medicine-and-dentistry/alcohol-related-liver-disease>

Alcohol-related liver disease represents the most common **cause of cirrhosis** in the United



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A lot of risk factors, including alcohol, drugs, environmental pollutants and irradiation, may induce oxidative stress in liver, which in turn results in severe liver diseases, such as alcoholic liver disease and non-alcoholic steatohepatitis.

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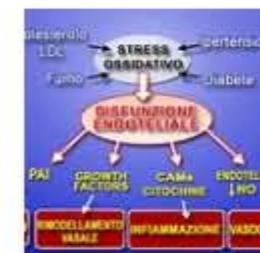
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Oxidative stress



Oxidative stress reflects an imbalance between the systemic manifestation of reactive oxygen species and a biological system's ability to readily detoxify the reactive intermediates or to repair the resulting damage. Disturbances in the normal redox state of cells can cause toxic effects through the production of

peroxides and free radicals that damage all components of the cell, including proteins, lipids, and DNA. Oxidative stress from oxidative metabolism causes base damage, as well as strand breaks in DNA. Base damage is mostly indirect and caused by reactive oxygen species generated, e.g. O_2^- , OH and H_2O_2 . Further, some reactive oxidative species act as cellular messengers in redox signaling. Thus, oxidative stress can cause disruptions in normal mechanisms of cellular signaling.

Wikipedia

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