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# Interplay between NRF2 and inflammatory mediators in COVID-19-related liver injury

NRF2 in COVID-19-Related Liver Injury

**Abstract**

COVID-19 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a global pandemic and poses a major threat to human health worldwide. In addition to respiratory symptoms, COVID-19 is usually accompanied by systemic inflammation and liver damage in moderate and severe cases. Nuclear factor erythroid 2–related factor 2 (NRF2) is a transcription factor that regulates the expression of antioxidant proteins, participating in COVID-19-mediated inflammation and liver injury. Here, we show the novel reciprocal regulation between NRF2 and inflammatory mediators

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## The interplay between inflammatory pathways and COVID ...

https://www.sciencedirect.com/science/article/pii/S0882401020310391

Jan 01, 2021 · Ulinastatin is a natural anti-**inflammatory** substance present in the body is a serine protease inhibitor. It is commonly used to treat pancreatitis and acute circulatory failure. Ulinastatin reduces the level of pro-**inflammatory mediators** (IL-1, IL-6, TNF-α and IFN-γ) and raises the level of anti-**inflammatory mediator** (IL-10) .

**Author:** Shalki Choudhary, Kajal Sharma, Om ... **Publish Year:** 2021

## Abnormal Liver Function Tests in Patients With COVID-19 ...

https://aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.31480

Jul 23, 2020 · Whether the presence of pre-existing **liver** disease could affect the course of COVID-19 and vice versa is largely unclear. Plasma **inflammatory** markers were not more elevated in patients with chronic **liver** diseases, (44, 47) and no association was found **between** pre-existing **liver** disease and COVID-19 severity or mortality.

**Cited by:** 16 **Author:** Anna Bertolini, Ivo P van de Peppel, Fran...
**Publish Year:** 2020

## Liver Injury in Patients Hospitalized with Coronavirus ...

https://aasldpubs.onlinelibrary.wiley.com/doi/10.1002/hep4.1631

Oct 16, 2020 · The occurrence of **liver injury** in patients with COVID-19 should prompt the investigation of basic **inflammatory** markers and IL-6 levels. Other **inflammatory** cytokines, such as IL-8, TNF-α, and IL-1β, are not associated with **COVID-19-related liver injury**.

**Cited by:** 1 **Author:** Ben L. Da, Tatyana Kushner, Maan El Hal...
**Publish Year:** 2020

## Mediators of Inflammation - Hindawi Publishing Corporation

https://www.hindawi.com/journals/mi/2020/8198963

The novel coronavirus is not only causing respiratory problems, but it may also damage the heart, kidneys, **liver**, and other organs; in Wuhan, 14 to 30% of COVID-19 patients have lost their kidney function and now require either dialysis or kidney transplants. The novel coronavirus gains entry into humans by targeting the ACE2 receptor that found on lung cells, which destroy human lungs ...

**Author:** Mujahed I Mustafa, Abdelrahman H A... **Publish Year:** 2020

## Interplay between Cellular and Molecular Inflammatory

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## Nrf2-interacting nutrients and COVID-19: time for research ...

https://ctajournal.biomedcentral.com/articles/10.1186/s13601-020-00362-7

Dec 03, 2020 · In the case of oxidative stress, stimulation of NFκB (associated with a degradation of both Keap 1 and **Nrf2**) results in an amplification loop of **inflammation**. Thus, an imbalance **between** the NFκB and **Nrf2** pathways has already been observed in T2D or in multiple sclerosis. By contrast, an active and effective anti-oxidant system could result in a preventive loop leading to anti-oxidative and anti-**inflammatory** ...

**Cited by:** 4 **Author:** Jean Bousquet, Jean-Paul Cristol, Wienczy...
**Publish Year:** 2020

## Potential Interplay between Nrf2, TRPA1, and TRPV1 in ...

https://europepmc.org/article/PMC/PMC8018185

However, there are few studies assessing the interactions **between Nrf2** and TRPA1, and their results are sometimes conflicting. Specific signalling pathways of lung ischemia-reperfusion **injury** impair **Nrf2**-antioxidant response and activate oxidative stress in the brainstem, thereby leading to the amplification of TRPA1, most likely via ROS .

## Integrated cytokine and metabolite analysis reveals ...

https://www.nature.com/articles/s41467-021-21907-9

Mar 12, 2021 · However, a tight correlation **between** dysregulated metabolic pathways and important **inflammatory** cytokines (e.g., IL-6, IP-10, IL-8, M-CSF, and IL-1α) in severe patients was observed (Fig. 2a).

**Author:** Nan Xiao, Meng Nie, Huanhuan Pang, B... **Publish Year:** 2021

## How COVID-19 induces cytokine storm with high mortality ...

https://inflammregen.biomedcentral.com/articles/10.1186/s41232-020-00146-3

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## Interplay between Nuclear Factor Erythroid 2–Related ...

https://www.atsjournals.org/doi/full/10.1165/rcmb.2013-0279OC

Nov 01, 2014 · This study indicates a ventilation-dependent activation of **nuclear factor erythroid 2-related factor 2** (Nrf2) and a positive feedback loop **between** Nrf2 and amphiregulin as a protective mechanism during mechanical ventilation. These findings improve the understanding of the molecular mechanisms underlying ventilator-induced lung **injury**.

**Cited by:** 6 **Author:** Lucy Kathleen Reiss, Athanassios Fragouli...
**Publish Year:** 2014

## The role of nuclear factor erythroid-2-related factor 2 ...

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6384919

Radiocontrast-induced nephropathy (CIN) is the third most common cause of acute renal failure. The pathophysiology of CIN is related to tubular **injury** caused by oxidative stress, and **nuclear factor erythroid-2-related factor 2** (Nrf2) is critical in coordinating intracellular antioxidative processes. We thus investigated the role of Nrf2 in CIN.

**Cited by:** 2 **Author:** Ji Eun Kim, So Yeon Bae, Shin Young Ahn, ...
**Publish Year:** 2019

## Therapeutic potential of digitoflavone on diabetic ...

https://www.nature.com/articles/srep12377

Jul 24, 2015 · **Nuclear factor erythroid 2-related factor 2** (Nrf2) has emerged as a therapeutic target in many diseases, because it can induce antioxidant enzymes ...

**Cited by:** 22 **Author:** Yang Yang, Gang Chen, Xiaolan Cheng, Zhi...
**Publish Year:** 2015

## Immunological Approaches Towards Cancer and Inflammation ...

https://www.frontiersin.org/articles/10.3389/fimmu.2018.00563

Mar 20, 2018 · The pro-**inflammatory mediators** released during the chronic **inflammation** tends to induce several molecular signaling cascades such as **nuclear factor** kappa B, MAPKinase, **nuclear factor erythroid 2-related factor 2**, phosphoinositide-3-kinase, Janus kinases/STAT, Wnt/B-catenin, and cyclic AMP response element binding protein.

**Cited by:** 136 **Author:** Xinglong Qu, Ying Tang, Shucheng Hua
**Publish Year:** 2018