

# Hydrogen-Rich Saline Attenuates Acute Hepatic Injury in Acute Necrotizing Pancreatitis by Inhibiting Inflammation and Apoptosis, Involving JNK and p38 Mitogen-Activated Protein Kinase–dependent Reactive Oxygen Species : Pancreas

[November 2016 - Volume 45 - Issue 10](#)

- [Previous Abstract](#)
- [Next Abstract](#)
- **Cite**
  - 
  - **Copy**
  - **Export to RIS**
  - **Export to EndNote**
- **Share**
  - **Email**
  - **Facebook**
  - **Twitter**
  - **LinkedIn**
- **Favorites**
- **Permissions**
- **More**
  - **Cite**
  - **Permissions**

Original Articles

## Hydrogen-Rich Saline Attenuates Acute Hepatic Injury in Acute Necrotizing Pancreatitis by Inhibiting Inflammation and Apoptosis, Involving JNK and p38 Mitogen-Activated Protein Kinase–dependent Reactive Oxygen Species

Shi, Qiao MD; Chen, Chen MD; Deng, Wen-hong MD; Wang, Peng MD; Zuo, Teng MD; Zhao, Liang MD; Yu, Jia MD; Zhao, Kai-liang MD; Mei, Fang-chao MM; Li, Chen MM; Wang, Gui-rong PHD; Wang, Wei-xing MD

[Author Information](#)

From the \*Department of General Surgery, Renmin Hospital of Wuhan University, Wuhan, Hubei Province, China; and †Department of Surgery, SUNY Upstate Medical University, Syracuse, NY.

Received for publication April 20, 2015; accepted April 26, 2016.

Address correspondence to: Weixing Wang, MD, Department of General Surgery, Renmin Hospital of Wuhan University, 238 Jiefang Road, Wuhan 430060, Hubei Province, China (e-mail: [sate.llite@163.com](mailto:sate.llite@163.com)).

Q.S. and C.C. contributed equally to this work.

This study was supported by the National Natural Science Foundation of China (no. 81370562 and no. 81300356) and the Key scientific research project of the health department of Hubei province (no. JX6A07).

The authors declare no conflict of interest.

Pancreas [45\(10\):p 1424-1431, November 2016.](#) | DOI: 10.1097/MPA.0000000000000678

- [Buy](#)

Metrics

## Abstract

### Objectives

The objective of this study was to study the role of hydrogen-rich saline (HRS) on acute hepatic injury (AHI) in acute necrotizing pancreatitis (ANP).

### Methods

Rats were used for this study and an ANP model was induced by injecting 5% sodium taurocholate into the biliary-pancreatic duct. Experiments were performed in 3 groups: sham, ANP, and ANP + HRS (HRS). Animals were killed at 3, 12, and 24 hours after operation, and then blood and tissue samples were harvested. Various physiological, histological, and cellular and molecular parameters were analyzed.

### Results

Analyses of serum, lipase, alanine transaminase, and aspartate aminotransferase indicated that ANP-induced AHI model was established successfully and HRS attenuated hepatic dysfunction. Hepatic superoxide dismutase and malondialdehyde levels showed HRS against oxidative stress. Cellular and molecular analyses including p-p38, p-JNK, p-ERK, and caspase-3, caspase-9, NF- $\kappa$ B, and TNF- $\alpha$  in hepatic tissues revealed that HRS attenuated ANP-induced AHI by inhibiting apoptosis and phosphorylation of JNK and p38, as well as NF- $\kappa$ B activation.

### Conclusions

Hydrogen-rich saline plays a protective role in ANP-induced AHI through inhibiting inflammation and apoptosis, involving JNK and p38 MAPK-dependent reactive oxygen species.

## Full Text Access for Subscribers:



### [Individual Subscribers](#)

[Log in for access](#)



Ovid®

### [Institutional Users](#)

[Access through Ovid®](#)



## Not a Subscriber?

[Buy](#)

[Subscribe](#)

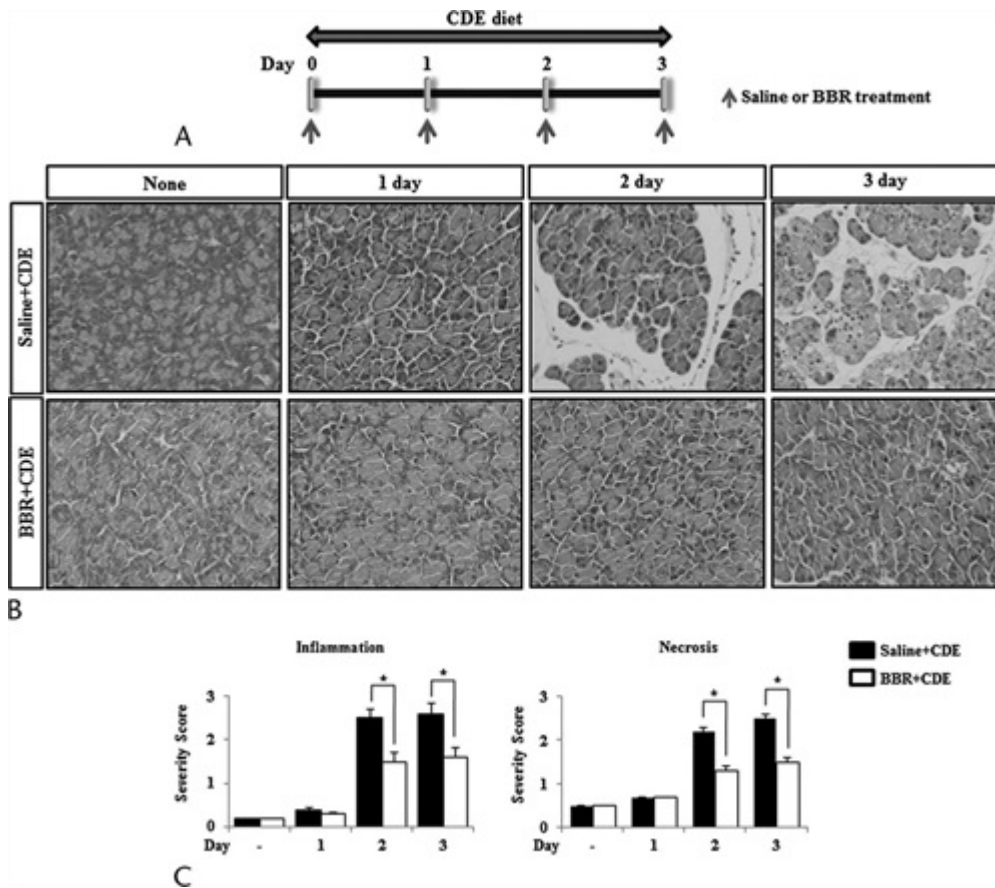
[Request Permissions](#)

You can read the full text of this article if you:

Select an option

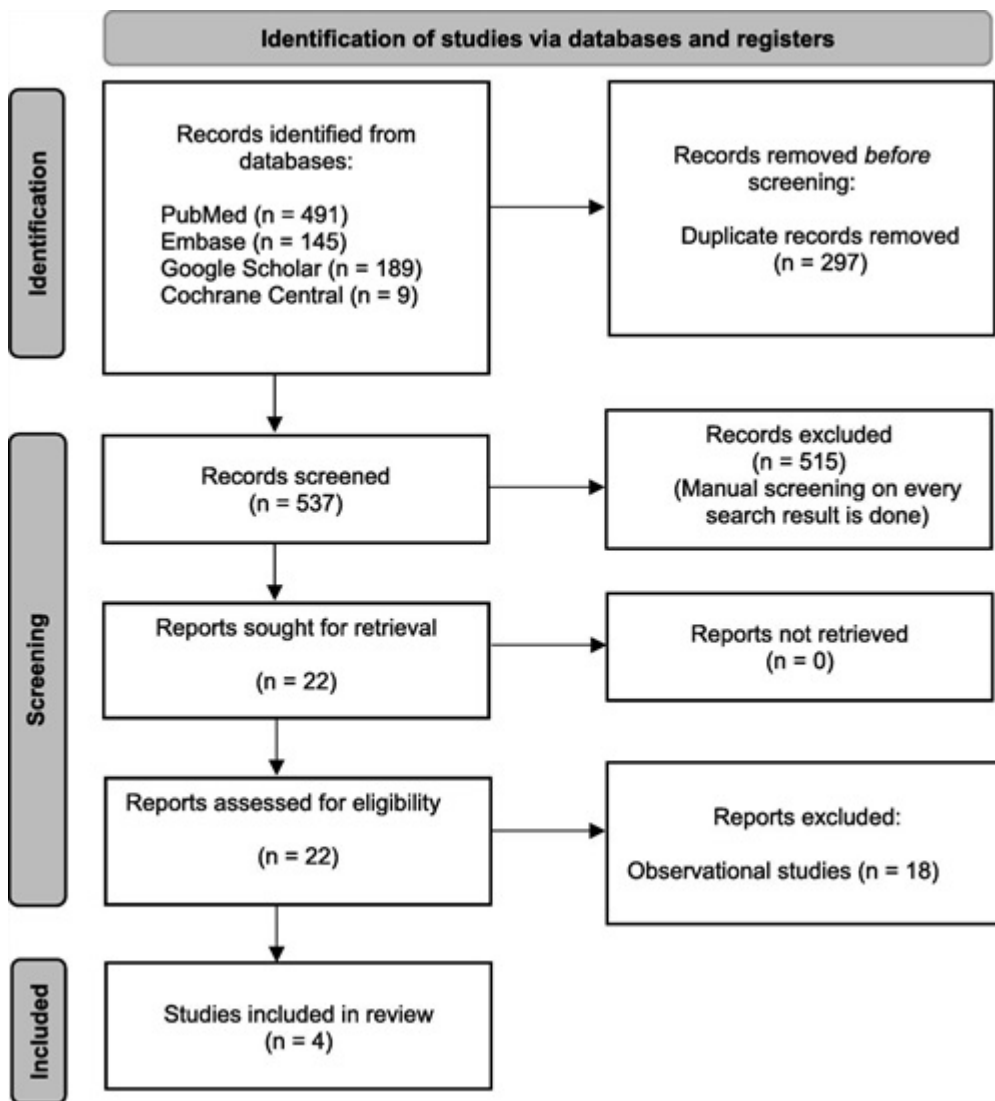
[Log In Access through Ovid](#)

## Related Articles



## [Effects of Berberine on Acute Necrotizing Pancreatitis and Associated Lung Injury](#)

September 2017



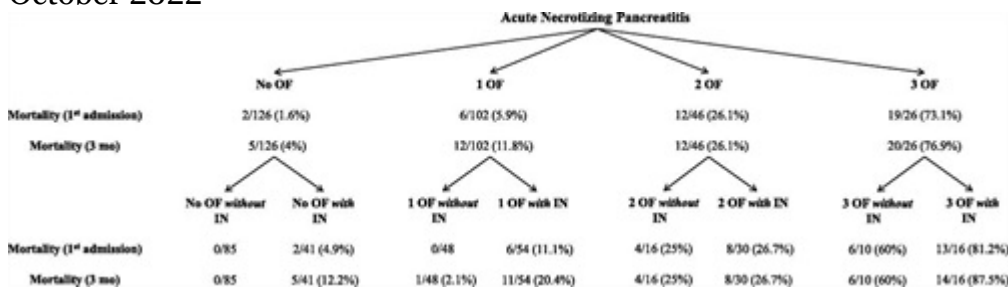
## [Fluid Resuscitation With Lactated Ringer's Solution Versus Normal Saline in Acute Pancreatitis](#)

August 2022



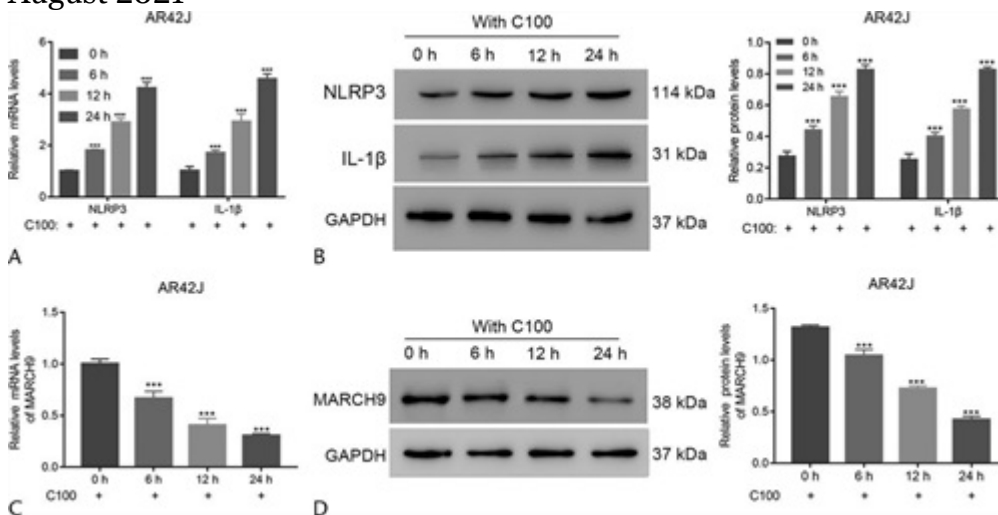
## Pancreatic Apoplexy

October 2022



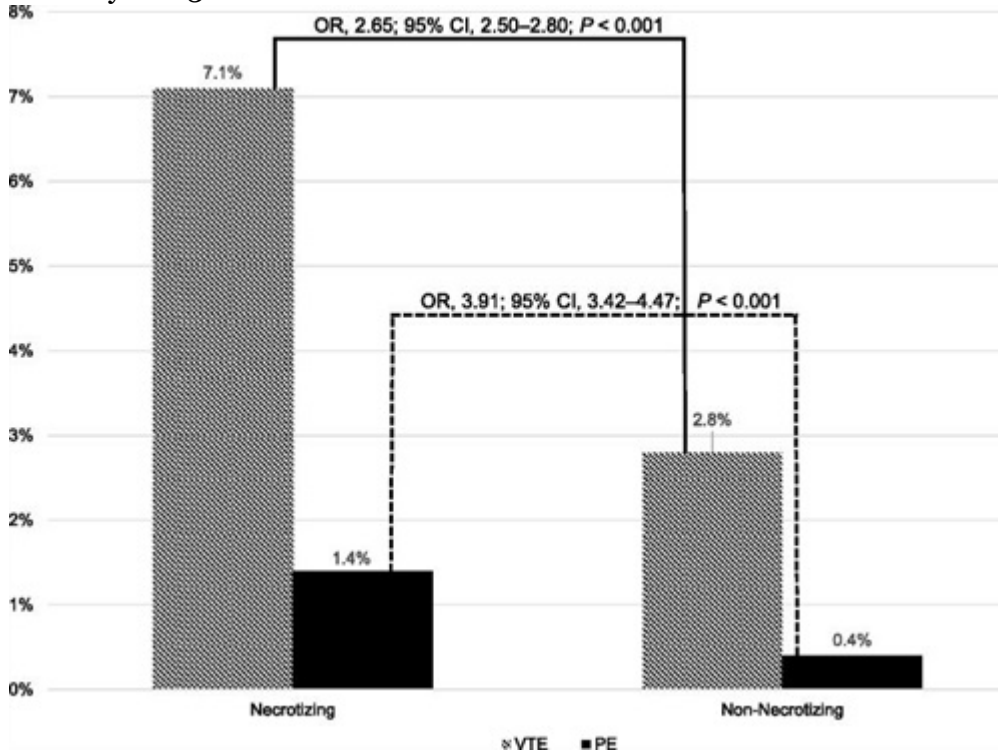
## Impact of Different Patterns of Organ Failure on Mortality in Acute Necrotizing Pancreatitis

August 2021



# [MARCH9 Mediates NOX2 Ubiquitination to Alleviate NLRP3 Inflammasome-Dependent Pancreatic Cell Pyroptosis in Acute Pancreatitis](#)

January 2023



## [Risk of Venous Thromboembolism in Acute Necrotizing Pancreatitis](#)

January 2021

[^Back to Top](#)



### Never Miss an Issue

Get new journal Tables of Contents sent right to your email inbox

### Browse Journal Content

- [Most Popular](#)
- [For Authors](#)
- [About the Journal](#)
- [Past Issues](#)
- [Current Issue](#)
- [Register on the website](#)
- [Subscribe](#)
- [Get eTOC Alerts](#)

## For Journal Authors

- [Submit an article](#)
- [How to publish with us](#)

## Customer Service

### Live Chat

- [Activate your journal subscription](#)
- [Activate Journal Subscription](#)
- [Browse the help center](#)
- [Help](#)

Contact us at:

- Support:  
[Submit a Service Request](#)
- TEL: (USA):  
TEL: (Int'l):  
800-638-3030 (within USA)  
301-223-2300 (international)

- [Manage Cookie Preferences](#)



- [Privacy Policy \(Updated June 29, 2023\)](#)
- [Legal Disclaimer](#)
- [Terms of Use](#)
- [Open Access Policy](#)
- [Feedback](#)
- [Sitemap](#)
- [RSS Feeds](#)
- [LWW Journals](#)
- Copyright © 2023
- [Wolters Kluwer Health, Inc. All rights reserved.](#)