# Article information:

Acoustic metamaterials-driven transdermal drug delivery for rapid and on-demand management of acute disease | Nature Communications  
<https://www.nature.com/articles/s41467-023-36581-2>

# Article summary:

1. Researchers have developed an active acoustic metamaterial patch for transdermal drug delivery to manage acute diseases.

2. The patch increases skin permeability, actively drives drugs into deeper tissues, and enables dynamic delivery through digital regulation.

3. In animal models of anaphylaxis, the acoustic metamaterial patch effectively rescued mice from anaphylaxis via a multi-burst release of epinephrine, showing better efficacy than the current “self-injectable epinephrine” strategy as a fixed-dose needle injection of epinephrine.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article discusses the development of a new technology for transdermal drug delivery using active acoustic metamaterials. The technology aims to provide personalized therapy for acute diseases by increasing skin permeability, enabling timely release of therapeutics with customized dosage, deeper tissue transport, and convenient and/or automated administration. The article provides a detailed description of the device design and working principle, as well as results from in vitro and in vivo experiments.

Overall, the article appears to be well-researched and informative. However, there are some potential biases and limitations that should be considered. Firstly, the article focuses solely on the benefits of the new technology without discussing any potential risks or drawbacks. It is important to note that any new medical technology carries some level of risk, and it would be helpful to have a balanced discussion of both the benefits and risks.

Additionally, while the article provides detailed information about the device design and working principle, it does not discuss any potential limitations or challenges that may arise during implementation or clinical use. For example, it is unclear how easily the device can be integrated into existing healthcare systems or how cost-effective it will be compared to other treatment options.

Furthermore, while the in vitro and in vivo experiments presented in the article are promising, they are still preliminary and further research will be needed to fully validate the effectiveness of this technology for treating acute diseases in humans.

In terms of one-sided reporting or unsupported claims, there do not appear to be any major issues with this article. The authors provide references for all claims made and present both theoretical models and experimental results to support their findings.

Overall, while this article presents an exciting new development in transdermal drug delivery technology, it is important to consider potential biases and limitations when evaluating its potential impact on healthcare. Further research will be needed to fully validate its effectiveness and safety for clinical use.

# Topics for further research:

* Potential risks and drawbacks of transdermal drug delivery using active acoustic metamaterials
* Integration of the new technology into existing healthcare systems
* Cost-effectiveness of the new technology compared to other treatment options
* Challenges that may arise during implementation or clinical use of the new technology
* Validation of the effectiveness and safety of the new technology for treating acute diseases in humans
* Comparison of the new technology with other transdermal drug delivery methods.

# Report location:

<https://www.fullpicture.app/item/a4896b7cc1dfb1904387902dc7dbd5c3>