# Article information:

Exaggerated exercise pressor reflex in adults with moderately elevated systolic blood pressure: role of purinergic receptors | American Journal of Physiology-Heart and Circulatory Physiology
<https://journals.physiology.org/doi/full/10.1152/ajpheart.00575.2013>

# Article summary:

1. Exaggerated blood pressure responses to exercise are associated with adverse cardiovascular events and increased risk of hypertension.

2. Purinergic receptors, activated by ATP released during muscle contraction, contribute to the exercise pressor reflex (EPR) and may play a role in EPR dysfunction in cardiovascular disease.

3. In vitro studies showed that the nonselective P2 receptor antagonist pyridoxal-5-phosphate (PLP) blunted ATP-induced increases in calcium concentration in isolated murine DRG neurons, while in vivo studies demonstrated that local P2 receptor blockade attenuated neurocirculatory responses to EPR activation to a greater extent in older adults with high blood pressure compared to normotensive adults.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "Exaggerated exercise pressor reflex in adults with moderately elevated systolic blood pressure: role of purinergic receptors" published in the American Journal of Physiology-Heart and Circulatory Physiology discusses the role of purinergic receptors in neurocirculatory regulation during exercise in adults with moderately elevated systolic blood pressure (HBP). The article highlights that an overactive skeletal muscle metaboreflex contributes to EPR dysfunction and exaggerated neurocirculatory responses to exercise in spontaneously hypertensive rats, and this finding has been translated to humans.

The article presents a detailed methodology for examining the effectiveness of pyridoxal-5-phosphate (PLP) as a nonselective P2 receptor antagonist in isolated murine DRG neurons. The authors hypothesize that PLP would blunt the ATP-induced increases in [Ca2+]i in DRG neurons, measured via fluorescence imaging. They further examine the contribution of P2 receptors to the neurocirculatory responses to exercise in older adults with HBP.

While the article provides valuable insights into the role of purinergic receptors in neurocirculatory regulation during exercise, it has some potential biases and limitations. Firstly, the study only examines the role of P2 receptors on neurocirculatory modulation during muscle contraction in adults with moderately elevated systolic blood pressure ranging between 130–159 mmHg (HBP), which limits its generalizability to other populations. Secondly, while the study provides evidence that P2 receptor activation elicits EPR in normal states, it does not explore counterarguments or alternative explanations for these findings.

Additionally, while the study notes that exaggerated pressor responses to exercise are associated with adverse cardiovascular and cerebrovascular events during and after physical activity, it does not provide a comprehensive discussion on possible risks associated with using PLP as a nonselective P2 receptor antagonist. Furthermore, while the study presents evidence supporting their hypothesis that PLP would blunt the ATP-induced increases in [Ca2+]i in DRG neurons, it does not present evidence for the claims made regarding the in vivo contribution of P2 receptors to the neurocirculatory responses to exercise in older adults with HBP.

In conclusion, while the article provides valuable insights into the role of purinergic receptors in neurocirculatory regulation during exercise, it has some potential biases and limitations. The study's focus on a specific population limits its generalizability, and there is a lack of comprehensive discussion on possible risks associated with using PLP as a nonselective P2 receptor antagonist. Additionally, while the study presents evidence supporting their hypothesis, it does not provide evidence for all claims made.

# Topics for further research:

* Risks associated with using pyridoxal-5-phosphate as a nonselective P2 receptor antagonist
* Alternative explanations for exaggerated pressor responses to exercise
* Neurocirculatory responses to exercise in populations other than adults with moderately elevated systolic blood pressure
* In vivo contribution of P2 receptors to neurocirculatory regulation during exercise in older adults with HBP
* Long-term effects of exaggerated exercise pressor reflex on cardiovascular and cerebrovascular health
* Mechanisms underlying skeletal muscle metaboreflex dysfunction in spontaneously hypertensive rats.

# Report location:

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