

Study clarifies link between salt and hypertension

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A review article by researchers at Boston University School of Medicine (BUSM) debunks the widely-believed concept that hypertension, or high blood pressure, is the result of excess salt causing an increased blood volume, exerting extra pressure on the arteries. Published online in the *Journal of Hypertension*, the study demonstrates that excess salt stimulates the sympathetic nervous system to produce adrenalin, causing artery constriction and hypertension.

The research was led by Irene Gavras, MD, and Haralambos Gavras, MD, both professors of medicine at BUSM.

"The purpose of this paper is to correct an erroneous concept that has prevailed for many years, even though scientific evidence has mounted against it," said Irene Gavras, who is also a physician in Boston Medical Center's Hypertension practice.

The term "volume-expanded hypertension" implies that excess salt leads to the retention of extra fluid within the arterial [circulatory system](#), causing an increase in [blood volume](#) and added pressure on the arterial walls. However, research has shown that conditions characterized by the expansion of blood volume from other causes, such as the secretion of antidiuretic hormone or the excessive elevation of blood sugar, do not cause a rise in blood pressure because the extra fluid is accommodated by the distention of capillaries and veins.

"The body's circulatory system is a highly flexible [vascular system](#) with

the capacity to open up new [capillaries](#) and distend veins in order to accommodate increased fluid volume," said Irene Gavras.

Through a review of numerous studies, the researchers demonstrated that the mechanism of hypertension resulting from the excessive consumption and retention of salt stimulates the [sympathetic nervous system](#) in the brain to increase adrenaline production. The increased adrenalin being circulated throughout the body causes the arteries to constrict, which results in resistance to blood flow and a decrease in circulatory volume.

The over-activation of the sympathetic nervous system – part of the autonomic nervous system that helps maintain the body's homeostasis – has been recognized clinically as a characteristic of hypertension that accompanies renal failure, which is the most typical example of elevated blood pressure from excessive salt retention. Diuretics, which remove excess salt, are widely used to treat this type of hypertension. However, this study provides convincing evidence that the sympathetic nervous system should be the focus of further investigations into treatments for hypertension.

"The implication of our findings shows that the optimal treatment for hypertension, for cases associated with renal failure, should not only include diuretics but also the use of drugs that block the central sympathetic nervous system," said Irene Gavras.

Provided by Boston University Medical Center

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