

Researchers discover powerful molecule regulator in blood pressure control system

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Researchers at Oregon Health & Science University's School of Dentistry (www.ohsu.edu/sod) have discovered that nitric oxide is a powerful regulator of a molecule that plays a critical role in the development and function of the nervous system. The finding could someday play a significant role in the prevention and treatment of high blood pressure, which affects about one in three adults in the United States.

The new discovery is published online and will appear in the May issue of the *Journal of Neuroscience Research*.

Changes in [blood pressure](#) are signaled to the brain by nerve cells called baroreceptors. The OHSU dental school team previously found that baroreceptors make a molecule called brain-derived neurotrophic factor (BDNF), which belongs to the family of neurotrophins that play a critical role in the development and plasticity of other nerve cells.

The OHSU dental school team found that [nitric oxide](#) is a potent regulator of BDNF in baroreceptor neurons. Nitric oxide is known for its ability to improve the elasticity of blood vessels and to lower blood pressure. It is the active metabolite of nitroglycerin, which has been used to treat coronary artery disease for more than 100 years. Nitric oxide widens small arteries and counteracts artery stiffening, and several lines of evidence also indicate that its deficiency leads to hypertension.

"This is the first study to show the role of nitric oxide in inhibiting

BDNF release from peripheral nerve cells," said Agnieszka Balkowiec, M.D., Ph.D., principal investigator, associate professor of integrative biosciences in the OHSU School of Dentistry, and adjunct assistant professor of physiology and pharmacology in the OHSU School of Medicine. "This finding supports our hypothesis that BDNF is involved in establishing connections in the blood pressure control system and could someday play a significant role in the prevention of high blood pressure."

More information: <http://www3.interscience.wiley.com/cgi-bin/fulltext/123189946/PDFSTART>

Provided by Oregon Health & Science University

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