Sildenafil drug improves insulin sensitivity in people at risk for diabetes

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The drug sildenafil, sold as Viagra and other brand names, improves insulin sensitivity in people at risk for diabetes, researchers at Vanderbilt University Medical Center reported today.

Sildenafil inhibits an enzyme called phosphodiesterase 5 (PDE5), resulting in relaxation of smooth muscle, vasodilation and increased blood flow. Sildenafil is used to treat erectile dysfunction and pulmonary arterial hypertension.

Animal studies suggest that sildenafil also can improve insulin sensitivity, the uptake of glucose from the bloodstream by muscle. This action can lower the level of circulating glucose, and potentially reduce the risk of diabetes.

In the current study, overweight individuals with prediabetes were randomly assigned to receive sildenafil or placebo (inactive drug) for three months. Of the 42 subjects who completed the study, those treated with sildenafil were significantly more sensitive to insulin, the researchers reported in today's Journal of Clinical Endocrinology and Metabolism.

While further studies are needed to determine whether long-term treatment can prevent the onset of diabetes in high-risk patients, "sildenafil and related drugs could offer a potential avenue for addressing the rising number of diabetes diagnoses," said Nancy J. Brown, M.D., chair of the Department of Medicine at Vanderbilt.

Brown, the Hugh J. Morgan Professor of Medicine, was co-senior author of the study with Cyndya A. Shibao, M.D., MSCI, assistant professor of Medicine.

According to the Endocrine Society, more than 26 million Americans have been diagnosed with type 2 diabetes, in which the body's tissues are resistant to insulin. Incidence of the disease, which is associated with obesity, is growing rapidly.

Weight loss and exercise regimens are difficult for many people, and some current medications aimed at preventing diabetes are limited by concerns about adverse effects, Brown said.

Sildenafil and related drugs prevent PDE5 from breaking down a chemical in the body called cyclic GMP, which relaxes blood vessels and increases insulin sensitivity. But unlike some other methods of raising cyclic GMP, sildenafil did not decrease an anti-clotting chemical in the body, the Vanderbilt researchers reported.

Source:
Vanderbilt University Medical Center
