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GLUCOSE METABOLISM: DISCOVERY OF A NEW MECHANISM THAT STRENGTHENS BLOOD VESSELS

Groundbreaking research against diabetes and arteriosclerosis

Researchers from the University of Padua discover a metabolic mechanism that plays a fundamental role in strengthening blood vessels that opens new ways to defeat diabetes and arteriosclerosis.

Diabetes and arteriosclerosis, despite having different characteristics, are often diagnosed in the same individual, and are among the main problems for public health in Europe. Characterized by an increase in glucose levels in the blood, diabetes is a cardiovascular disease that represents one of the challenges of modern medicine as it is constantly and rapidly growing in the Western world, as well as in Italy. Arteriosclerosis is also a cardiovascular disease that causes the thickening and loss of elasticity of the arterial wall of blood vessels. Atherosclerosis represents one of the leading causes of death and disability in Europe and around the world.



Massimo Santoro

«Indeed, both pathologies concern communication and metabolic alterations affecting the cells that make up blood vessels - **explains Prof. Massimo Santoro, University of Padua, leading researcher and last author of the study** -, that are, endothelial cells and smooth muscle cells. Our research has shown that glucose metabolism serves to control the structure and elasticity of the artery walls. Glucose is used to produce elastin, which is secreted around blood vessels and attracts smooth muscle cells. This mechanism physiologically strengthens the structure of the vessels».

Prof. Santoro adds «It is important to understand if in pathological cardiovascular conditions of excess glucose in the blood, as in the case of diabetics, is a greater atherosclerotic risk due to an increase in arterial stiffness.»

The *Oxidative pentose phosphate pathway controls vascular mural cell coverage by regulating extracellular matrix composition* study published in the prestigious international journal «Nature Metabolism» was conducted by the research group led by Prof. Massimo Santoro of Laboratory of Angiogenesis and Cancer Metabolism at the University of Padua, in collaboration with colleagues from the University of Milan and the University of Edinburgh.

This discovery provides the data needed to further decipher the causes of genetic and metabolic diseases associated with blood vessels, including diabetes and arteriosclerosis,

opening the possibility for the screening of drugs that improve metabolic fitness of endothelial and wall cells in health and disease.

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Link: <https://www.nature.com/articles/s42255-021-00514-4>