

Artificial blood vessels synthesized to resist clotting

Researchers from ITMO University in Russia say they have developed artificial blood vessels that reportedly are not susceptible to blood clot formation. The achievement was made possible by a new generation of drug-containing coating applied to the inner surface of the vessel, according to the scientists whose study (“Synthesis of Thrombolytic Sol-Gel Coatings: Toward Drug-Entrapped Vascular Grafts”) was published in the Journal of Medicinal Chemistry.

Surgery, associated with cardiovascular diseases, such as ischemia, often requires the implantation of vascular grafts, which are artificial blood vessels, aimed at restoring the blood flow in a problematic part of the circulatory system. A serious disadvantage of vascular grafts is their tendency to get blocked due to clot formation, which results in compulsory and lifelong intake of anticoagulants among patients and sometimes may even require an additional surgical intervention.

In the study, a research team led by Vladimir Vinogradov, Ph.D., head of the international laboratory of solution chemistry of advanced materials and technologies at ITMO University, proposed a solution to the problem. The scientists synthesized a thin film made of densely packed aluminum oxide nanorods blended with molecules of a thrombolytic enzyme (urokinase-type plasminogen activator). Adhered to the inner surface of a vascular graft, the film causes the parietal area of the graft to get filled with a stable concentration of plasmin, which is capable of dissolving clots that form.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Artificial Blood Vessels Prove Resistant to Clot Formation](#)