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Liana Azizova[1], Volodymyr Chernyshenko[2] D Q Yuba Mikhalovska[1]
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Thrombosis induced by biomaterials a er their contact with blood is a main reason of medical device failure. To make material surface more thromboresistant di erent approaches have been undertaken. NO generating biomaterial has proven to play a crucial role in the prevention of thrombosis by inhibiting the platelets activation/adhesion. However, immobilization of the direct thrombin inhibitors onto material surface makes material more thromboresistant by preventing thrombin-mediated blood clotting. e aim of this research was to immobilize argatroban a direct thrombin inhibitor with reliable and predictable anticoagulant e ect onto PVC and PU polymers. Both polymers were rst imprinted with Cu ions for the catalytic generation of NO (this research was reported earlier). Argatroban was immobilized on the Cu-modi ed PVC and PU using the polydopamine ad-layer via the Michael addition/Schi base reaction. e amount of argatroban bound to the polymer surface was measured (spectrophotometric determination at 334 nm) as 11.92 nmol/cm^2 on PVC and 13.10 nmol/cm^2 on PU surface. Assay using thrombin-speci c chromogenic substrate was performed to evaluate the thrombin inhibition capacity of argatroban-modi ed polymers. It was found that both Argatroban-modi ed polymers inhibit thrombin activity in PBS. In order to con rm the NO generation catalyzed by Cu/Arg-modi ed PVC and PU samples a er incubation with 100 µM GSNO/GSH in the PBS during 1h was examined using ArrowSTRAIGHT™ nitric ox55 (es)-8 ng ilin es s ro5 (b)12 (i