THE EFFECTS OF SULODEXIDE IN RECOVERY OF DIABETES-INDUCED CHANGES OF RAT VASCULAR REACTIVITY DISPLAYED BY COMPUTER-BASED MODELING

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Sulodexide is a sulfonated glycosaminoglycan with known antithrombotic action, consisting of heparan sulfate (80%) and dermatane sulfate (20%). Various authors have confirmed its anticoagulant and profibrinolytic as well as its beneficial effect on basal glomerular membrane. As the aim of our study we set the evaluation of supposed changes of rat vessel reactivity induced by streptozotocine-induced diabetes mellitus and treated by sulodexide using classical descriptive methods as well as computer-based modeling.
Adult male Wistar rats were divided into four groups: control (K), group treated by sulodexide (S) and two diabetic groups without (D) and with sulodexide teatment (DS). After 5 weeks lasting treatment we investigated the contractile responses of isolated and perfused vascular segments by series of contractions induced by successively increasing bolus doses of noradrenaline (0,5; 1; 3; 6; 10 μg). After these series, relaxatory responses were induced by single bolus dose of acetylcholine (20 μg) in the state of precontraction.
Evaluation of contractile responses by the descriptive methods did not unveil significant differences between groups at any used dose of noradrenaline. We found out clear decline in relaxatory responses in the diabetic group compared to the control group, partially recovered by sulodexide. Among computer parameters detected by digital analysis, we found a significant differences in the vessel sensitivity at a dose 1 μg of noradrenaline in the diabetic group compared to control and S groups and also at dose 0,5 μg in the DS group compared to diabetic group. Further significant differences were revealed comparing the rate constant of relaxation and Akaike information criteria between control group and diabetic and DS group, respectively.
In conclusion, computer-based modeling seems to be a promising approach to refine detailed knowledge of effects of different agents impacting vascular reactivity.

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