IMPACT OF TYPE-2 DIABETES MELLITUS ON ALTERNATIONS OF ATP-SENSITIVE POTASSIUM CHANNELS IN INTERNAL MAMMARY ARTERY

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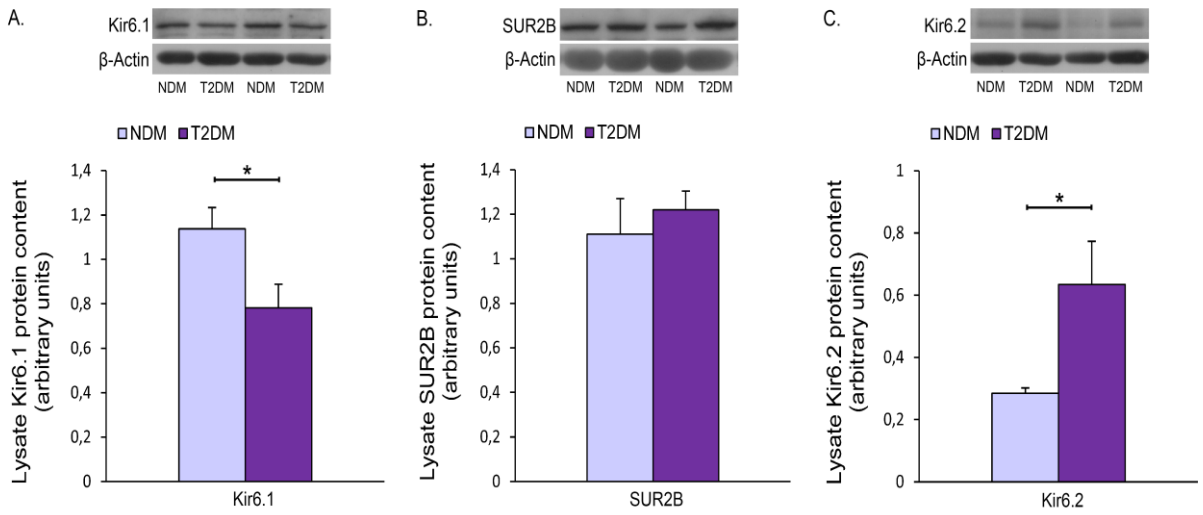
INTRODUCTION

The prevalence of type-2 diabetes mellitus (T2DM) is closely related to the occurrence of obesity. At the same time, there are more people with T2DM who required bypass surgery and the status of their blood vessels used as bypass grafts are crucial for successful surgery. The knowledge that T2DM can impact those blood vessels and caused decreased potential of vasodilatation leading us to the adequate treatment of those grafts and patients. Pinacidil is a well-known vasodilator which mechanism of action includes interaction with smooth muscle ATP-sensitive potassium (K_{ATP}) channels. In case when the endothelium is damaged, which has been observed in diabetes, K channels are the most important mechanism of relaxation of blood vessels. Previously, we have shown that pinacidil relaxed human internal mammary artery (HIMA) obtained from patients with T2DM, but K_{ATP} channels were not involved in this process. Thus, the aim of our study was to detect differences in the expression of K_{ATP} channel subunits in HIMA obtained from patients with/without T2DM.

MATERIAL AND METHOD

The expression of K_{ATP} subunits (Kir6.1, Kir6.2 and SUR2B) was detected by western blot and immunohistochemis try using segments of HIMA obtained from patients who were undergoing coronary bypass surgery



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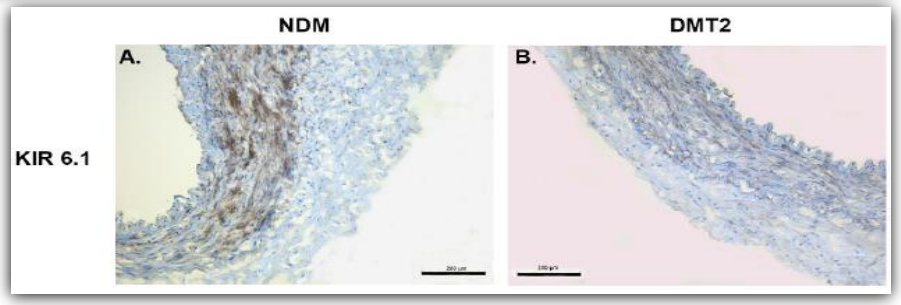

CONCLUSION: K_{ATP} channels are expressed in the vascular smooth muscle of HIMA, but they are not involved in the dilatation of HIMA induced by pinacidil in T2DM patients. It seems that pinacidil has an additional mechanism(s) of action. Also, this could implicate that the presence of diabetes decreasing level of the expression of Kir6.x subunits.