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Introduction

SGLT2 inhibitors are well known for their protective effect on various organs, and especially the inhibitory effect on cardiovascular events has been attracting attention in recent years. The most common cardiovascular event, ischemic heart disease, is closely related to lifestyle diseases such as hypertension and diabetes mellitus. In this research, we evaluated cardioprotective effect in an ischemia-reperfusion model of the Langendorff system.

Methods

Langendorff assay, Animals: guinea-pig

Data Collection:

Electrocardiogram (HR, RR, PR, QRS, QT, QTc)

Fridericia's formula: $QTc = QT/RR^{1/3}$

Left-ventricular Pressure (LVSP, LVEDP, LVDP, LV dP/dt max)

Drugs:

DMSO (vehicle), Propranolol (beta-blocker), Verapamil (calcium channel blocker), Dapagliflozin (SGLT2 inhibitor)

Protocol of Experiment:

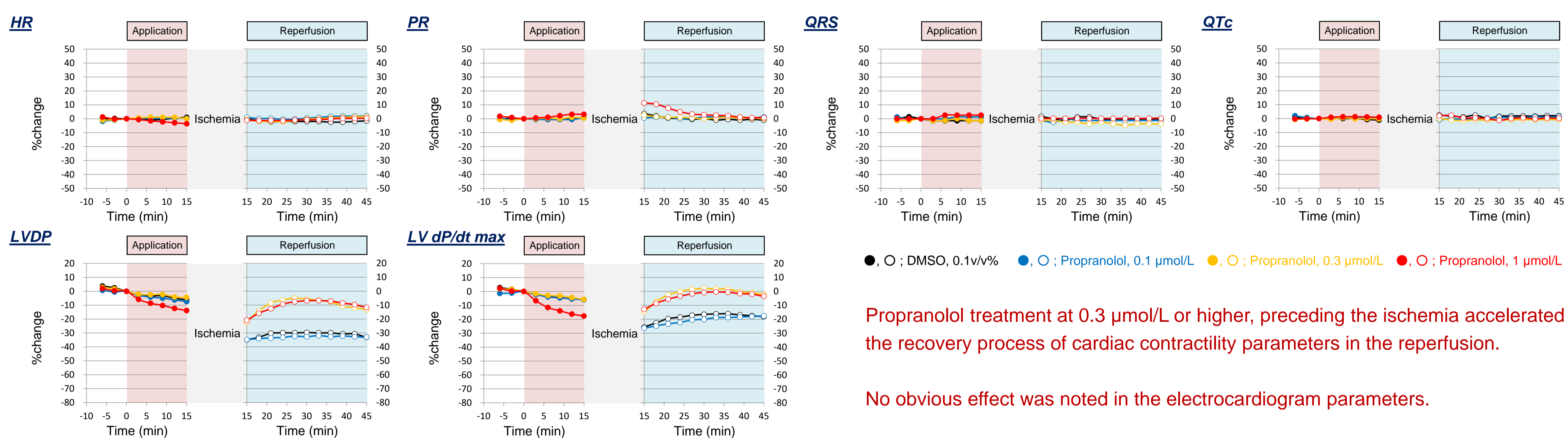


After parameters stabilized, drug was applied for 15 minutes, and subsequently perfusion to the heart was stopped to give ischemic conditions for 30 minutes.

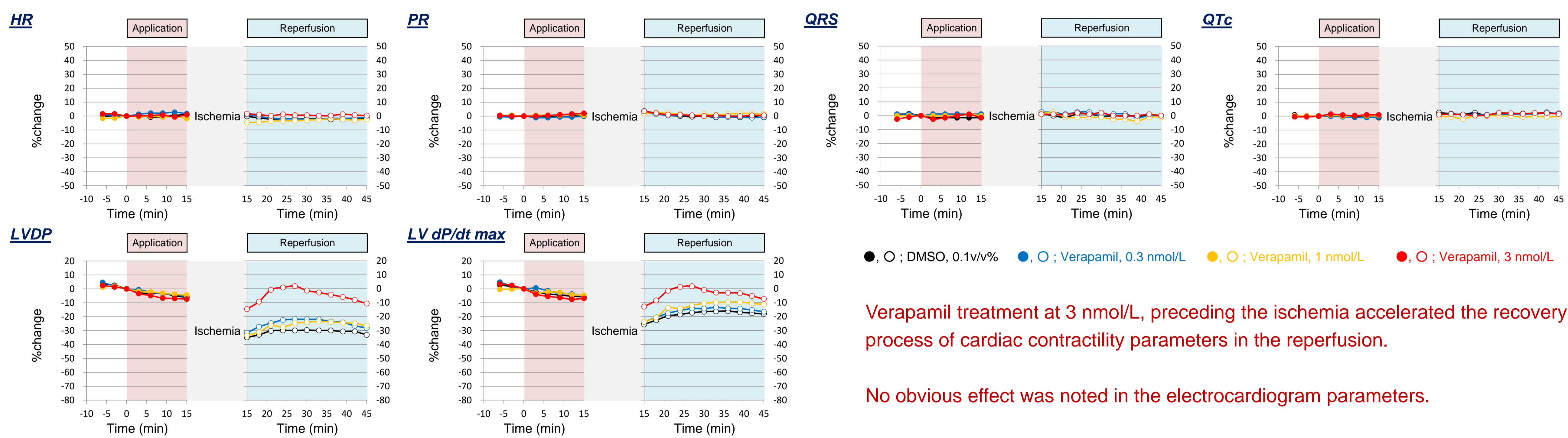
After that, the ischemic heart was reperfused with the Krebs-Henseleit solution.

Results

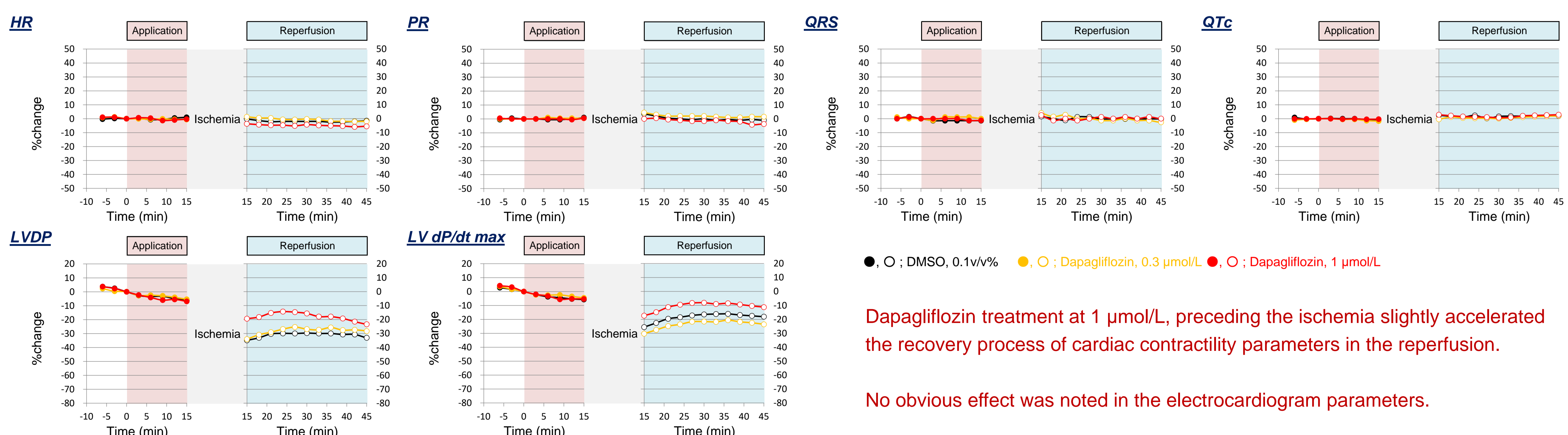
Propranolol



Verapamil



Dapagliflozin



Conclusion

The results indicate that cardioprotective effect can be assessed with the Langendorff system.