The 3rd Vascular and Cellular Dynamics Seminar
Basic Cardiovascular Research Seminar Series
– Winter Seminar 2024

Date Dec 19th, 2024 (Thu.) 17:00-19:00

Place Room 303, Lecture building,
Faculty of Medicine, University of Miyazaki

Discovery of New Functions of Endothelial Cells in Diabetic Nephropathy

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Diabetes is complicated by microcirculatory disturbances due to hyperglycaemia and dysfunction of various organs. Among them, diabetic nephropathy is the leading cause of chronic kidney disease in worldwide. The primary treatment for diabetes is the control of blood glucose levels, but many patients are also associated with hypertension and are prescribed antihypertensive drugs. Some antihypertensive drugs are known to have specific organ-protective effects in diabetes. This is recognised as a secondary effect of the antihypertensive action due to differences in target specificity and pharmacokinetics. We identified a factor that is secreted by vascular endothelial cells and regulates glomerular homeostasis under hyperglycaemic conditions, and found that disruption of the factor's regulatory mechanism exacerbates diabetic nephropathy. Furthermore, high-throughput screening was conducted to identify secretion inhibitors, which led to the identification of several calcium antagonists known to have renoprotective effects. The secretion inhibitory effects of these agents were suggested to be antihypertensive and independent of their antihypertensive effects. Although the model of drug discovery and pharmaceuticals has changed significantly in the past and present, through these studies I have experienced collaborations with drug discovery support venture companies and major pharmaceutical companies. Furthermore, my experience communicating with VCs and consulting companies has led me to consider the future of drug discovery.

References

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Dev Cell. 2008;14(2):205-15.

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