Protein kinase C-β: a novel therapeutic target to prevent neurovascular damage in diabetes

Stroke continues to be one of the leading causes of morbidity and mortality in the World. Type-2 diabetes is encountered in approximately 40% of all stroke patients and is associated with the increased incidence and recurrence of this condition. Type-2 diabetes is also known to exacerbate the severity of several stroke-induced cerebrovascular complications such as brain oedema that emerges from disruption of the blood-brain barrier and constitutes the leading cause of death within the first week after a stroke. Hence, to develop new and effective therapeutic strategies, it is crucial to identify the mechanisms involved in diabetes-mediated worse outcomes observed after an ischaemic stroke.

In this regard, protein kinase C-β (PKC-β) closely associated with diabetes- and ischaemic injury-induced hyperpermeability deserves attention. Considering the significant increases reported in PKC-β protein expression in brain infarcts of deceased stroke patients, this project will assess whether inhibition of this particular signalling pathway may be protective against type-2 diabetes-evoked worse neurovascular outcomes in a rodent model of diabetes with/out ischaemic stroke.

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Project availability: International students only