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Neuronal insulin receptor signaling: Regulation by therapeutic drugs and bioactive agents

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It has become increasingly evident that insulin receptor signaling is pivotal in regulating axon pathfinding, synaptic formation, maintenance and repair of neuronal circuits, as well as neurogenesis. Conversely, dysregulated insulin receptor signaling (e.g. insulin resistance) may be involved in dementia associated with normal aging and age-related neurodegenerative disease, thus insulin receptor signaling being the major molecular targets of neuroprotective drugs. Molecular structure, function and downstream signaling cascade of insulin receptor have been well characterized, however, little is known whether extra- and intracellular signalings could regulate function and cell surface expression of insulin receptor in neuronal cells. We have demonstrated that the cell surface density of insulin receptor was up- or down-regulated by several therapeutic drugs and bioactive agents (e.g. insulin, IGF-I, lithium, valproic acid, cyclosporine A, FK506, geldanamaycin and anti-cancer agent 17-AAG) via multiple intracellular mechanisms in adrenal chromaffin cells (embryologically derived from neural crest). In this symposium, we would like to discuss the mechanisms of cell surface expression of insulin receptor as well as new approach to pharmacotherapy for neurodegenerative disease.

Biography

Dr Yanagita was graduated from University of Miyazaki, Miyazaki Medical College, Miyazaki, Japan in 1990 to be given his M.D. degree. He has completed his Ph.D. at the age of 31 years from University of Miyazaki, Miyazaki Medical College. He is the Associate Professor of Department of Pharmacology, University of Miyazaki, Miyazaki Medical College. He has published more than 60 papers in reputed journals.

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