The importance of insulin in the regulation of corporal aging has been established by the dramatic increases in longevity experienced by animals in which the adipose insulin receptor or the insulin-related daf genes have been genetically modified. However, a long-held belief, described as recently as ten years ago in endocrinology textbooks, declared that the brain was an insulin-insensitive organ. This pervasive belief was challenged by leaders like Jesse Roth, Daniel Porte, and others, who established the existence of insulin receptors in the central nervous system and a clear role for insulin in CNS control of feeding. New research demonstrates that, analogous to its influence on corporal aging, insulin also makes important contributions to brain aging and the expression of late-life neurodegenerative disease. Insulin plays a key role in cognition and other aspects of normal brain function. Insulin resistance induces chronic peripheral insulin elevations and is associated with reduced insulin activity both in periphery and brain. The insulin resistance syndrome underlies conditions such as Type 2 diabetes mellitus and hypertension, which are associated with age-related cognitive impairment and Alzheimer’s disease.

This volume contains the proceedings of the 24th Colloque Médecine et Recherche dedicated to Alzheimer’s disease organized by the Fondation IPSEN entitled “Diabetes, Insulin and Alzheimer’s Disease” which brought together experts from basic and clinical science to provide a broad survey of the role of insulin in the brain, and to discuss the mechanisms through which insulin dysregulation contributes to the development of cognitive impairment and late-life neurodegenerative disease. Each author has greatly furthered our understanding of the relationships among insulin, diabetes, and Alzheimer’s disease, moving us far beyond the belief that the brain is an insulin-insensitive organ. Given the recent pandemic of conditions associated with insulin resistance, it is imperative that we achieve a comprehensive knowledge of the mechanisms through which insulin resistance affects brain function in order to develop therapeutic strategies to address these effects.

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