

REFERENCES

Abbas, A.M., Elsamanoudy, A.Z., 2011. Effects of 17beta-estradiol and antioxidant administration on oxidative stress and insulin resistance in ovariectomized rats. *Can J Physiol Pharmacol.* 89, 497-504.

Abbott, L.C., Nahm, S.S., 2004. Neuronal nitric oxide synthase expression in cerebellar mutant mice. *Cerebellum.* 3, 141-51.

Alderton, W.K., Cooper, C.E., Knowles, R.G., 2001. Nitric oxide synthases: structure, function and inhibition. *Biochem J.* 357, 593-615.

Alfarez, D.N., et al., 2009. Corticosterone reduces dendritic complexity in developing hippocampal CA1 neurons. *Hippocampus.* 19, 828-36.

Amitai, Y., 2010. Physiologic role for "inducible" nitric oxide synthase: a new form of astrocytic-neuronal interface. *Glia.* 58, 1775-81.

Appleton, D.J., Rand, J.S., Sunvold, G.D., 2005. Basal plasma insulin and homeostasis model assessment (HOMA) are indicators of insulin sensitivity in cats. *J Feline Med Surg.* 7, 183-93.

Awasthi, Y.C., et al., 2009. Physiological and pharmacological significance of glutathione-conjugate transport. *J Toxicol Environ Health B Crit Rev.* 12, 540-

51.

Alsultan, A.I., et al., 2010. Relationship between oxidative stress, ferritin and insulin resistance in sickle cell disease. *Eur Rev Med Pharmacol Sci.* 14, 527-38.

- Atochin, D.N., et al., 2007. The phosphorylation state of eNOS modulates vascular reactivity and outcome of cerebral ischemia in vivo. *J Clin Invest.* 117, 1961-7.
- Ballatori, N., et al., 2009. Glutathione dysregulation and the etiology and progression of human diseases. *Biol Chem.* 390, 191-214.
- Bastard, J.P., et al., 2006. Recent advances in the relationship between obesity, inflammation, and insulin resistance. *Eur Cytokine Netw.* 17, 4-12.
- Belfiore, A., et al., 2009. Insulin receptor isoforms and insulin receptor/insulin-like growth factor receptor hybrids in physiology and disease. *Endocr Rev.* 30, 586-623.
- Bishop, N.A., Lu, T., Yankner, B.A., 2010. Neural mechanisms of ageing and cognitive decline. *Nature.* 464, 529-35.
- Boden, G., Hoeldtke, R.D., 2003. Nerves, fat, and insulin resistance. *N Engl J Med.* 349, 1966-7.
- Boghossian, S., et al., 2009. High-fat diets induce a rapid loss of the insulin anorectic response in the amygdala. *Am J Physiol Regul Integr Comp Physiol.* 297, R1302-11.
- Boissel, J.P., Schwarz, P.M., Forstermann, U., 1998. Neuronal-type NO synthase: transcript diversity and expressional regulation. *Nitric Oxide.* 2, 337-49.
- Bruning, J.C., et al., 2000. Role of brain insulin receptor in control of body weight and reproduction. *Science.* 289, 2122-5.
- Buettner, R., et al., 2006. Defining high-fat-diet rat models: metabolic and molecular effects of different fat types. *J Mol Endocrinol.* 36, 485-501.

Canabal, D.D., et al., 2007a. Hyperglycemia impairs glucose and insulin regulation of nitric oxide production in glucose-inhibited neurons in the ventromedial hypothalamus. *Am J Physiol Regul Integr Comp Physiol.* 293, R592-600.

Canabal, D.D., et al., 2007b. Glucose, insulin, and leptin signaling pathways modulate nitric oxide synthesis in glucose-inhibited neurons in the ventromedial hypothalamus. *Am J Physiol Regul Integr Comp Physiol.* 292, R1418-28.

Carvalho, J.B., et al., 2001. Insulin modulates leptin-induced STAT3 activation in rat hypothalamus. *FEBS Lett.* 500, 119-24.

Cashion, M.F., Banks, W.A., Kastin, A.J., 1996. Sequestration of centrally administered insulin by the brain: effects of starvation, aluminum, and TNF- α . *Horm Behav.* 30, 280-6.

Ceriello, A., 2000. Oxidative stress and glycemic regulation. *Metabolism.* 49, 27-9.

Chakravarty, S., Rizvi, S.I., 2011. Day and Night GSH and MDA Levels in Healthy Adults and Effects of Different Doses of Melatonin on These Parameters. *Int J Cell Biol.* 2011, 404591.

Chen, J., et al., 2004. The localization of neuronal nitric oxide synthase may influence its role in neuronal precursor proliferation and synaptic maintenance. *Dev Biol.* 269, 165-82.

Chen, J., et al., 2005. Endothelial nitric oxide synthase regulates brain-derived neurotrophic factor expression and neurogenesis after stroke in mice. *J Neurosci.* 25, 2366-75.

Chiang, H.T., et al., 2009. Neuronal nitric oxide synthase activation is involved in insulin-mediated cardiovascular effects in the nucleus tractus solitarii of rats. *Neuroscience.* 159, 727-34.

Chiu, S.L., Cline, H.T., 2010. Insulin receptor signaling in the development of neuronal structure and function. *Neural Dev.* 5, 7.

Citri, A., Malenka, R.C., 2008. Synaptic plasticity: multiple forms, functions, and mechanisms. *Neuropsychopharmacology.* 33, 18-41.

Craft, S., Watson, G.S., 2004. Insulin and neurodegenerative disease: shared and specific mechanisms. *Lancet Neurol.* 3, 169-78.

Dalkara, T., et al., 1994. Blood flow-dependent functional recovery in a rat model of focal cerebral ischemia. *Am J Physiol.* 267, H678-83.

Dasgupta, S., et al., 2005. Myelin basic protein-primed T cells of female but not male mice induce nitric-oxide synthase and proinflammatory cytokines in microglia: implications for gender bias in multiple sclerosis. *J Biol Chem.* 280, 32609-17.

de la Monte, S.M., et al., 2009. Insulin resistance and neurodegeneration: roles of obesity, type 2 diabetes mellitus and non-alcoholic steatohepatitis. *Curr Opin Investig Drugs.* 10, 1049-60.

de Vinuesa, S.G., et al., 2006. Insulin resistance, inflammatory biomarkers, and adipokines in patients with chronic kidney disease: effects of angiotensin II blockade. *J Am Soc Nephrol.* 17, S206-12.

Dinerman, J.L., et al., 1994. Endothelial nitric oxide synthase localized to hippocampal pyramidal cells: implications for synaptic plasticity. *Proc Natl Acad Sci U S A.* 91, 4214-8.

Doyle, C., et al., 1996. The selective neuronal NO synthase inhibitor 7-nitro-indazole blocks both long-term potentiation and depotentiation of field EPSPs in rat hippocampal CA1 in vivo. *J Neurosci.* 16, 418-24.

- Droste, S.K., et al., 2008. Corticosterone levels in the brain show a distinct ultradian rhythm but a delayed response to forced swim stress. *Endocrinology*. 149, 3244-53.
- Ellman, G.L., 1959. Tissue sulfhydryl groups. *Arch Biochem Biophys*. 82, 70-7.
- Endoh, M., Maiese, K., Wagner, J.A., 1994. Expression of the neural form of nitric oxide synthase by CA1 hippocampal neurons and other central nervous system neurons. *Neuroscience*. 63, 679-89.
- Endres, M., et al., 2004. Targeting eNOS for stroke protection. *Trends Neurosci*. 27, 283-9.
- Erol, A., 2008. An integrated and unifying hypothesis for the metabolic basis of sporadic Alzheimer's disease. *J Alzheimers Dis*. 13, 241-53.
- Esler, M., et al., 2001. Sympathetic nervous system and insulin resistance: from obesity to diabetes. *Am J Hypertens*. 14, 304S-309S.
- Evans, J.L., et al., 2003. Are oxidative stress-activated signaling pathways mediators of insulin resistance and beta-cell dysfunction? *Diabetes*. 52, 1-8.
- Evans, J.L., Maddux, B.A., Goldfine, I.D., 2005. The molecular basis for oxidative stress-induced insulin resistance. *Antioxid Redox Signal*. 7, 1040-52.
- Faraj, M., Lu, H.L., Cianflone, K., 2004. Diabetes, lipids, and adipocyte secretagogues. *Biochem Cell Biol*. 82, 170-90.
- Feron, O., et al., 1996. Endothelial nitric oxide synthase targeting to caveolae. Specific interactions with caveolin isoforms in cardiac myocytes and endothelial cells. *J Biol Chem*. 271, 22810-4.
- Floyd, R.A., Hensley, K., 2002. Oxidative stress in brain aging. Implications for therapeutics of neurodegenerative diseases. *Neurobiol Aging*. 23, 795-807.

Fujioka, M., et al., 1987. Function and reactivity of sulfhydryl groups of rat liver glycine methyltransferase. *Biochemistry*. 26, 5696-702.

Fung, T.T., et al., 2001. Association between dietary patterns and plasma biomarkers of obesity and cardiovascular disease risk. *Am J Clin Nutr*. 73, 61-7.

Garden, G.A., Moller, T., 2006. Microglia biology in health and disease. *J Neuroimmune Pharmacol*. 1, 127-37.

Geller, D.A., et al., 1993. Molecular cloning and expression of inducible nitric oxide synthase from human hepatocytes. *Proc Natl Acad Sci U S A*. 90, 3491-5.

Gerozissis, K., 2008. Brain insulin, energy and glucose homeostasis; genes, environment and metabolic pathologies. *Eur J Pharmacol*. 585, 38-49.

Ghareeb, D.A., et al., 2011. Non-alcoholic fatty liver induces insulin resistance and metabolic disorders with development of brain damage and dysfunction. *Metab Brain Dis*. 26, 253-67.

Gill, H., et al., 2005. The key role of insulin resistance in the cardiometabolic syndrome. *Am J Med Sci*. 330, 290-4.

Gill, S.S., Tuteja, N., 2010. Reactive oxygen species and antioxidant machinery in abiotic stress tolerance in crop plants. *Plant Physiol Biochem*. 48, 909-30.

Greenwood, C.E., Winocur, G., 2005. High-fat diets, insulin resistance and declining cognitive function. *Neurobiol Aging*. 26 Suppl 1, 42-5.

Grunfeld, C., Shigenaga, J.K., Ramachandran, J., 1985. Urea treatment allows dithiothreitol to release the binding subunit of the insulin receptor from the cell membrane: implications for the structural organization of the insulin receptor. *Biochem Biophys Res Commun*. 133, 389-96.

- Habib, M.P., Dickerson, F.D., Mooradian, A.D., 1994. Effect of diabetes, insulin, and glucose load on lipid peroxidation in the rat. *Metabolism*. 43, 1442-5.
- Haffner, S.M., Miettinen, H., Stern, M.P., 1997. The homeostasis model in the San Antonio Heart Study. *Diabetes Care*. 20, 1087-92.
- Havrankova, J., et al., 1978. Identification of insulin in rat brain. *Proc Natl Acad Sci U S A*. 75, 5737-41.
- He, J., de la Monte, S., Wands, J.R., 2010. The p85beta regulatory subunit of PI3K serves as a substrate for PTEN protein phosphatase activity during insulin mediated signaling. *Biochem Biophys Res Commun*. 397, 513-9.
- Huang, C.C., Lee, C.C., Hsu, K.S., 2010. The role of insulin receptor signaling in synaptic plasticity and cognitive function. *Chang Gung Med J*. 33, 115-25.
- Huang, P.L., et al., 1993. Targeted disruption of the neuronal nitric oxide synthase gene. *Cell*. 75, 1273-86.
- Huang, Z., et al., 1996. Enlarged infarcts in endothelial nitric oxide synthase knockout mice are attenuated by nitro-L-arginine. *J Cereb Blood Flow Metab*. 16, 981-7.
- Hwang, L.L., et al., 2010. Sex differences in high-fat diet-induced obesity, metabolic alterations and learning, and synaptic plasticity deficits in mice. *Obesity (Silver Spring)*. 18, 463-9.
- Iqbal, N., 2007. The burden of type 2 diabetes: strategies to prevent or delay onset. *Vasc Health Risk Manag*. 3, 511-20.
- Iwakiri, Y., et al., 2002. Phosphorylation of eNOS initiates excessive NO production in early phases of portal hypertension. *Am J Physiol Heart Circ Physiol*. 282, H2084-90.

- Jesko, H., Chalimoniuk, M., Strosznajder, J.B., 2003. Activation of constitutive nitric oxide synthase(s) and absence of inducible isoform in aged rat brain. *Neurochem Int.* 42, 315-22.
- Jiang, X., et al., 2004. Differential vulnerability of immature murine neurons to oxygen-glucose deprivation. *Exp Neurol.* 190, 224-32.
- Jones, A.R., Shusta, E.V., 2007. Blood-brain barrier transport of therapeutics via receptor-mediation. *Pharm Res.* 24, 1759-71.
- Jones, S.C., et al., 2003. Nitric oxide synthase inhibition depresses the height of the cerebral blood flow-pressure autoregulation curve during moderate hypotension. *J Cereb Blood Flow Metab.* 23, 1085-95.
- Kaiyala, K.J., et al., 2000. Obesity induced by a high-fat diet is associated with reduced brain insulin transport in dogs. *Diabetes.* 49, 1525-33.
- Kalmijn, S., et al., 2004. Dietary intake of fatty acids and fish in relation to cognitive performance at middle age. *Neurology.* 62, 275-80.
- Kelley, J.B., et al., 2009. Impairments in fear conditioning in mice lacking the nNOS gene. *Learn Mem.* 16, 371-8.
- Kirchner, L., et al., 2004. Impaired cognitive performance in neuronal nitric oxide synthase knockout mice is associated with hippocampal protein derangements. *Nitric Oxide.* 11, 316-30.
- Koca, S.S., et al., 2009. Insulin resistance is related with oxidative stress in systemic lupus erythematosus. *Anadolu Kardiyol Derg.* 9, 23-8.
- Krieger-Brauer, H.I., Kather, H., 1992. Human fat cells possess a plasma membrane-bound H₂O₂-generating system that is activated by insulin via a mechanism bypassing the receptor kinase. *J Clin Invest.* 89, 1006-13.

- Le Good, J.A., et al., 1998. Protein kinase C isotypes controlled by phosphoinositide 3-kinase through the protein kinase PDK1. *Science*. 281, 2042-5.
- Lee, C.C., et al., 2009. Insulin rescues amyloid beta-induced impairment of hippocampal long-term potentiation. *Neurobiol Aging*. 30, 377-87.
- Lieberman, L.S., 2003. Dietary, evolutionary, and modernizing influences on the prevalence of type 2 diabetes. *Annu Rev Nutr*. 23, 345-77.
- Lin, S., et al., 2000. Development of high fat diet-induced obesity and leptin resistance in C57Bl/6J mice. *Int J Obes Relat Metab Disord*. 24, 639-46.
- Lin, X., et al., 2004. Dysregulation of insulin receptor substrate 2 in beta cells and brain causes obesity and diabetes. *J Clin Invest*. 114, 908-16.
- Lindqvist, A., et al., 2006. High-fat diet impairs hippocampal neurogenesis in male rats. *Eur J Neurol*. 13, 1385-8.
- Liu, W., Zhou, C., 2012. Corticosterone reduces brain mitochondrial function and expression of mitofusin, BDNF in depression-like rodents regardless of exercise preconditioning. *Psychoneuroendocrinology*. 37, 1057-70.
- Lustig, R.H., 2010. Fructose: metabolic, hedonic, and societal parallels with ethanol. *J Am Diet Assoc*. 110, 1307-21.
- Maddux, B.A., et al., 2001. Protection against oxidative stress-induced insulin resistance in rat L6 muscle cells by micromolar concentrations of alpha-lipoic acid. *Diabetes*. 50, 404-10.
- Manco, M., Calvani, M., Mingrone, G., 2004. Effects of dietary fatty acids on insulin sensitivity and secretion. *Diabetes Obes Metab*. 6, 402-13.

- Markvartova, V., Vozech, F., 2008. The effect of nitric oxide synthase inhibitors nitro-L-arginine and 7-nitroindazole on spatial learning and motor functions in Lurcher mutant and wild type mice. *Prague Med Rep.* 109, 40-9.
- Marsden, P.A., et al., 1992. Molecular cloning and characterization of human endothelial nitric oxide synthase. *FEBS Lett.* 307, 287-93.
- Matsuzaki, T., et al., 2010. Insulin resistance is associated with the pathology of Alzheimer disease: the Hisayama study. *Neurology.* 75, 764-70.
- McEwen, B.S., 2007. Physiology and neurobiology of stress and adaptation: central role of the brain. *Physiol Rev.* 87, 873-904.
- McNay, E.C., Cotero, V.E., 2010. Mini-review: impact of recurrent hypoglycemia on cognitive and brain function. *Physiol Behav.* 100, 234-8.
- Meng, R., et al., 2011. Anti-oxidative effect of apocynin on insulin resistance in high-fat diet mice. *Ann Clin Lab Sci.* 41, 236-43.
- Miyata, T., van Ypersele de Strihou, C., 2009. Translation of basic science into clinical medicine: novel targets for diabetic nephropathy. *Nephrol Dial Transplant.* 24, 1373-7.
- Moreira, P.I., et al., 2009. An integrative view of the role of oxidative stress, mitochondria and insulin in Alzheimer's disease. *J Alzheimers Dis.* 16, 741-61.
- Muniyappa, R., et al., 2007. Cardiovascular actions of insulin. *Endocr Rev.* 28, 463-91.
- Muniyappa, R., et al., 2008. Current approaches for assessing insulin sensitivity and resistance in vivo: advantages, limitations, and appropriate usage. *Am J Physiol Endocrinol Metab.* 294, E15-26.

Murphy, B.A., et al., 2009. AMP-activated protein kinase and nitric oxide regulate the glucose sensitivity of ventromedial hypothalamic glucose-inhibited neurons. *Am J Physiol Cell Physiol.* 297, C750-8.

Nishida, Y., et al., 2001. Neuronal nitric oxide strongly suppresses sympathetic outflow in high-salt Dahl rats. *J Hypertens.* 19, 627-34.

Niswender, K.D., et al., 2003. Insulin activation of phosphatidylinositol 3-kinase in the hypothalamic arcuate nucleus: a key mediator of insulin-induced anorexia. *Diabetes.* 52, 227-31.

Nunokawa, Y., Ishida, N., Tanaka, S., 1993. Cloning of inducible nitric oxide synthase in rat vascular smooth muscle cells. *Biochem Biophys Res Commun.* 191, 89-94.

Okada, S., et al., 1998. Insulin regulates the dynamic balance between Ras and Rap1 signaling by coordinating the assembly states of the Grb2-SOS and CrkII-C3G complexes. *EMBO J.* 17, 2554-65.

Olefsky, J.M., 1990. The insulin receptor. A multifunctional protein. *Diabetes.* 39, 1009-16.

Oliva, A., Farina, J., Llabres, M., 2000. Development of two high-performance liquid chromatographic methods for the analysis and characterization of insulin and its degradation products in pharmaceutical preparations. *J Chromatogr B Biomed Sci Appl.* 749, 25-34.

Olson, T.S., Bamberger, M.J., Lane, M.D., 1988. Post-translational changes in tertiary and quaternary structure of the insulin proreceptor. Correlation with acquisition of function. *J Biol Chem.* 263, 7342-51.

Ono, H., et al., 2008. Activation of hypothalamic S6 kinase mediates diet-induced hepatic insulin resistance in rats. *J Clin Invest.* 118, 2959-68.

Onufriev, M.V., et al., 1999. [The effect of oxidative stress on brain nitric oxide synthase activity in vivo and in vitro]. *Russ Fiziol Zh Im I M Sechenova.* 85, 531-8.

Osmanovic, J., et al., 2010. Chronic exogenous corticosterone administration generates an insulin-resistant brain state in rats. *Stress.* 13, 123-31.

Patel, M.M., et al., 2009. Getting into the brain: approaches to enhance brain drug delivery. *CNS Drugs.* 23, 35-58.

Pawlak, J., Derlacz, R.A., 2011. [The mechanism of insulin resistance in peripheral tissues]. *Postepy Biochem.* 57, 200-6.

Pipatpiboon, N., et al., 2012. PPARgamma agonist improves neuronal insulin receptor function in hippocampus and brain mitochondria function in rats with insulin resistance induced by long term high-fat diets. *Endocrinology.* 153, 329-38.

Piroli, G.G., et al., 2007. Corticosterone impairs insulin-stimulated translocation of GLUT4 in the rat hippocampus. *Neuroendocrinology.* 85, 71-80.

Porte, D., Jr., Baskin, D.G., Schwartz, M.W., 2005. Insulin signaling in the central nervous system: a critical role in metabolic homeostasis and disease from *C. elegans* to humans. *Diabetes.* 54, 1264-76.

Pratchayasakul, W., Chattipakorn, N., Chattipakorn, S.C., 2011a. Effects of estrogen in preventing neuronal insulin resistance in hippocampus of obese rats are different between genders. *Life Sci.* 89, 702-7.

- Pratchayasakul, W., et al., 2011b. Effects of high-fat diet on insulin receptor function in rat hippocampus and the level of neuronal corticosterone. *Life Sci.* 88, 619-27.
- Rasgon, N.L., et al., 2011. Insulin resistance and hippocampal volume in women at risk for Alzheimer's disease. *Neurobiol Aging.* 32, 1942-8.
- Reagan, L.P., McEwen, B.S., 2002. Diabetes, but not stress, reduces neuronal nitric oxide synthase expression in rat hippocampus: implications for hippocampal synaptic plasticity. *Neuroreport.* 13, 1801-4.
- Reddy, S.S., et al., 2009. Preventive effect of *Tinospora cordifolia* against high-fructose diet-induced insulin resistance and oxidative stress in male Wistar rats. *Food Chem Toxicol.* 47, 2224-9.
- Riccardi, G., Giacco, R., Rivellese, A.A., 2004. Dietary fat, insulin sensitivity and the metabolic syndrome. *Clin Nutr.* 23, 447-56.
- Roberts, C.K., et al., 2005. A high-fat, refined-carbohydrate diet induces endothelial dysfunction and oxidant/antioxidant imbalance and depresses NOS protein expression. *J Appl Physiol.* 98, 203-10.
- Rothe, F., Langnaese, K., Wolf, G., 2005. New aspects of the location of neuronal nitric oxide synthase in the skeletal muscle: a light and electron microscopic study. *Nitric Oxide.* 13, 21-35.
- Rui, L., et al., 2001. Insulin/IGF-1 and TNF-alpha stimulate phosphorylation of IRS-1 at inhibitory Ser307 via distinct pathways. *J Clin Invest.* 107, 181-9.
- Saely, C.H., et al., 2005. The metabolic syndrome, insulin resistance, and cardiovascular risk in diabetic and nondiabetic patients. *J Clin Endocrinol Metab.* 90, 5698-703.

- Sase, K., Michel, T., 1995. Expression of constitutive endothelial nitric oxide synthase in human blood platelets. *Life Sci.* 57, 2049-55.
- Satirapoj, B., et al., 2011. Insulin resistance in dialysis versus non dialysis end stage renal disease patients without diabetes. *J Med Assoc Thai.* 94 Suppl 4, S87-93.
- Scandalios, J.G., 2005. Oxidative stress: molecular perception and transduction of signals triggering antioxidant gene defenses. *Braz J Med Biol Res.* 38, 995-1014.
- Schulinkamp, R.J., et al., 2000. Insulin receptors and insulin action in the brain: review and clinical implications. *Neurosci Biobehav Rev.* 24, 855-72.
- Schwartz, M.W., et al., 1992. Insulin in the brain: a hormonal regulator of energy balance. *Endocr Rev.* 13, 387-414.
- Schwarz, P.M., Kleinert, H., Forstermann, U., 1999. Potential functional significance of brain-type and muscle-type nitric oxide synthase I expressed in adventitia and media of rat aorta. *Arterioscler Thromb Vasc Biol.* 19, 2584-90.
- Shaul, P.W., et al., 1994. Endothelial nitric oxide synthase is expressed in cultured human bronchiolar epithelium. *J Clin Invest.* 94, 2231-6.
- Spratt, D.E., et al., 2007. Differential binding of calmodulin domains to constitutive and inducible nitric oxide synthase enzymes. *Biochemistry.* 46, 8288-300.
- Srinivasan, K., et al., 2005. Combination of high-fat diet-fed and low-dose streptozotocin-treated rat: a model for type 2 diabetes and pharmacological screening. *Pharmacol Res.* 52, 313-20.
- Stranahan, A.M., et al., 2008. Diet-induced insulin resistance impairs hippocampal synaptic plasticity and cognition in middle-aged rats. *Hippocampus.* 18, 1085-8.

- Styskal, J., et al., 2012. Oxidative stress and diabetes: What can we learn about insulin resistance from antioxidant mutant mouse models? *Free Radic Biol Med.* 52, 46-58.
- Taghibiglou, C., et al., 2009. Mechanisms involved in cholesterol-induced neuronal insulin resistance. *Neuropharmacology.* 57, 268-76.
- Taylor, S.I., et al., 1992. Mutations in the insulin receptor gene. *Endocr Rev.* 13, 566-95.
- Teng, B., et al., 1998. Expression of endothelial nitric oxide synthase in human and rabbit gastrointestinal smooth muscle cells. *Am J Physiol.* 275, G342-51.
- Toda, N., Ayajiki, K., Okamura, T., 2009. Cerebral blood flow regulation by nitric oxide in neurological disorders. *Can J Physiol Pharmacol.* 87, 581-94.
- Tomino, Y., Hagiwara, S., Gohda, T., 2011. AGE-RAGE interaction and oxidative stress in obesity-related renal dysfunction. *Kidney Int.* 80, 133-5.
- Trakul, N., Rosner, M.R., 2005. Modulation of the MAP kinase signaling cascade by Raf kinase inhibitory protein. *Cell Res.* 15, 19-23.
- Vallance, P., Leiper, J., 2002. Blocking NO synthesis: how, where and why? *Nat Rev Drug Discov.* 1, 939-50.
- van der Heide, L.P., Ramakers, G.M., Smidt, M.P., 2006. Insulin signaling in the central nervous system: learning to survive. *Prog Neurobiol.* 79, 205-21.
- Vasdev, S., Gill, V.D., Singal, P.K., 2006. Modulation of oxidative stress-induced changes in hypertension and atherosclerosis by antioxidants. *Exp Clin Cardiol.* 11, 206-16.

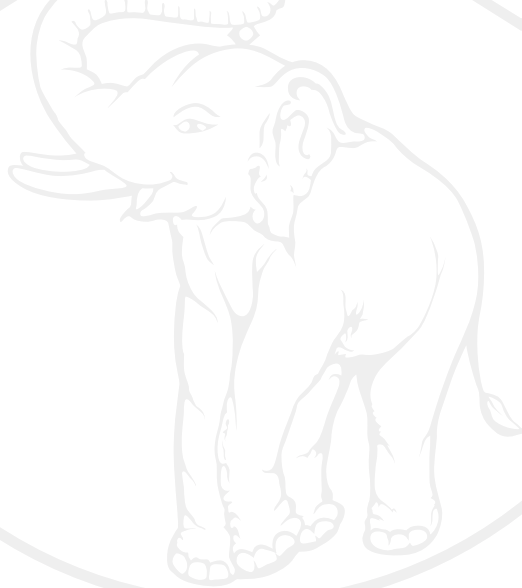
- Virkkamaki, A., Ueki, K., Kahn, C.R., 1999. Protein-protein interaction in insulin signaling and the molecular mechanisms of insulin resistance. *J Clin Invest.* 103, 931-43.
- Wang, Y.T., Linden, D.J., 2000. Expression of cerebellar long-term depression requires postsynaptic clathrin-mediated endocytosis. *Neuron.* 25, 635-47.
- Wang, Y.Y., Lui, P.C., Li, J.Y., 2009. Receptor-mediated therapeutic transport across the blood-brain barrier. *Immunotherapy.* 1, 983-93.
- Wei, L.T., Matsumoto, H., Rhoads, D.E., 1990. Release of immunoreactive insulin from rat brain synaptosomes under depolarizing conditions. *J Neurochem.* 54, 1661-5.
- Whitmer, R.A., 2007. Type 2 diabetes and risk of cognitive impairment and dementia. *Curr Neurol Neurosci Rep.* 7, 373-80.
- Winkler, G., Cseh, K., 2009. [Molecular mechanisms and correlations of insulin resistance, obesity, and type 2 diabetes mellitus]. *Orv Hetil.* 150, 771-80.
- Winocur, G., Greenwood, C.E., 2005. Studies of the effects of high fat diets on cognitive function in a rat model. *Neurobiol Aging.* 26 Suppl 1, 46-9.
- Wong, A., et al., 2001. Advanced glycation endproducts co-localize with inducible nitric oxide synthase in Alzheimer's disease. *Brain Res.* 920, 32-40.
- Xie, Q.W., et al., 1992. Cloning and characterization of inducible nitric oxide synthase from mouse macrophages. *Science.* 256, 225-8.
- Xu, Y., et al., 2011. Curcumin prevents corticosterone-induced neurotoxicity and abnormalities of neuroplasticity via 5-HT receptor pathway. *J Neurochem.* 118, 784-95.

- Yang, R.L., et al., 2008. Lipoic acid prevents high-fat diet-induced dyslipidemia and oxidative stress: a microarray analysis. *Nutrition*. 24, 582-8.
- Yoshitomi, H., et al., 2011. Phosphorylated endothelial NOS Ser1177 via the PI3K/Akt pathway is depressed in the brain of stroke-prone spontaneously hypertensive rat. *J Stroke Cerebrovasc Dis*. 20, 406-12.
- Yu, W., et al., 2000. Decrease of neuronal nitric oxide synthase in the cerebellum of aged rats. *Neurosci Lett*. 291, 37-40.
- Yu, W.J., et al., 1999. Decrease of nitric oxide synthase in the cerebrocortex of streptozotocin-induced diabetic rats. *Neurosci Lett*. 272, 99-102.
- Yu, W.J., et al., 2000. Insulin restores neuronal nitric oxide synthase expression in streptozotocin-induced diabetic rats. *Life Sci*. 68, 625-34.
- Yuan, Z.R., et al., 2004. Upregulated expression of neuronal nitric oxide synthase by insulin in both neurons and astrocytes. *Brain Res*. 1008, 1-10.
- Zeng, J., Davies, M.J., 2005. Evidence for the formation of adducts and S-(carboxymethyl)cysteine on reaction of alpha-dicarbonyl compounds with thiol groups on amino acids, peptides, and proteins. *Chem Res Toxicol*. 18, 1232-41.
- Zhang, L., et al., 2009. Diet-induced metabolic disturbances as modulators of brain homeostasis. *Biochim Biophys Acta*. 1792, 417-22.
- Zhao, M.R., Zhang, J.T., 1999. Effects of 7-nitroindazole on long-term potentiation induced by l-clausenamide and high-frequency stimulation in rat hippocampus in vivo. *Zhongguo Yao Li Xue Bao*. 20, 319-23.
- Zhao, W., et al., 2010. Permissive role of insulin in the expression of long-term potentiation in the hippocampus of immature rats. *Neurosignals*. 18, 236-45.

Zhao, W.Q., et al., 2004. Insulin and the insulin receptor in experimental models of learning and memory. *Eur J Pharmacol.* 490, 71-81.

Zhou, J., Zhang, F., Zhang, Y., 2000. Corticosterone inhibits generation of long-term potentiation in rat hippocampal slice: involvement of brain-derived neurotrophic factor. *Brain Res.* 885, 182-91.

Zhou, L., Zhu, D.Y., 2009. Neuronal nitric oxide synthase: structure, subcellular localization, regulation, and clinical implications. *Nitric Oxide.* 20, 223-30.



CHIANG MAI UNIVERSITY 1964

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

Copyright© by Chiang Mai University
All rights reserved