

Shenk JC, Liu J, Fischbach K, Xu K, Puchowicz M, Obrenovich ME, Gasimov E, Alvarez LM, Ames BN, Lamanna JC, Aliev G. The effect of acetyl-L-carnitine and R-alpha-lipoic acid treatment in ApoE4 mouse as a model of human Alzheimer's disease. *J Neurol Sci.* 2009 Mar 31

Muellenbach EM, Diehl CJ, Teachey MK, Lindborg KA, Hasselwander O, Matuschek M, Henriksen EJ. Metabolic interactions of AGE inhibitor pyridoxamine and antioxidant alpha-lipoic acid following 22 weeks of treatment in obese Zucker rats. *Life Sci.* 2009 Apr 10;84(15-16):563-8. Epub 2009 Feb 11.

Siedlak SL, Casadesus G, Webber KM, Pappolla MA, Atwood CS, Smith MA, Perry G. Chronic antioxidant therapy reduces oxidative stress in a mouse model of Alzheimer's disease. *Free Radic Res.* 2009 Jan 21:1-9.

Petersen Shay K, Hagen TM. Age-associated impairment of Akt phosphorylation in primary rat hepatocytes is remediated by alpha-lipoic acid through PI3 kinase, PTEN, and PP2A. *Biogerontology* (2008) 18.

Aliev G, Liu J, Shenk JC, Fischbach K, Pacheco GJ, Chen SG, Obrenovich ME, Ward WF, Richardson AG, Smith MA, Gasimov E, Perry G, Ames BN. Neuronal mitochondrial amelioration by feeding acetyl-L-carnitine and lipoic acid to aged rats. *J Cell Mol Med* (2008) 28.

Muellenbach EA, Diehl CJ, Teachey MK, Lindborg KA, Archuleta TL, Harrell NB, Andersen G, Somoza V, Hasselwander O, Matuschek M, Henriksen EJ. Interactions of the advanced glycation end product inhibitor pyridoxamine and the antioxidant alpha-lipoic acid on insulin resistance in the obese Zucker rat. *Metabolism* (2008) 57(10) 1465-72.

Long J, Gao F, Tong L, Cotman CW, Ames BN, Liu J. Mitochondrial Decay in the Brains of Old Rats: Ameliorating Effect of Alpha-Lipoic Acid and Acetyl-L-carnitine. *Neurochem Res* (2008) 10.

Hao J, Shen W, Tian C, Liu Z, Ren J, Luo C, Long J, Sharman E, Liu J. Mitochondrial nutrients improve immune dysfunction in the type 2 diabetic Goto-Kakizaki rats. *J Cell Mol Med* (2008).

Zhang H, Jia H, Liu J, Ao N, Yan B, Shen W, Wang X, Li X, Luo C, Liu J. Combined R-alpha-lipoic acid and acetyl-L-carnitine exerts efficient preventative effects in a cellular model of Parkinson's disease. *J Cell Mol Med* (2008).

Maczurek A, Hager K, Kenklies M, Sharman M, Martins R, Engel J, Carlson D, Münch G. Lipoic acid as an anti-inflammatory and neuroprotective treatment for Alzheimer's disease. *Advanced Drug Delivery Reviews* (2008).

Carlson DA, Young KL, Fischer SJ, Ulrich H. An evaluation of the stability and plasma pharmacokinetics of R-lipoic acid (RLA) and R-dihydrolipoic acid (R-DHLA) dosage forms in human plasma from healthy volunteers. Chapter 10 in *Alpha Lipoic Acid: Energy Production, Antioxidant Activity and Health Effects*. Packer L, Patel M, eds. Boca Raton, New York, London: Taylor & Francis Publishers (2008) 235-270.

Petersen-Shay K, Shenvi S, Hagen TM. Lipoic acid as an inducer of phase II detoxification enzymes through activation of Nr-f2 dependent gene expression. Chapter 14 in *Alpha Lipoic Acid: Energy Production, Antioxidant Activity and Health Effects*. Packer L, Patel M, eds. Boca Raton, New York, London: Taylor & Francis Publishers (2008) 349-371.

Shen W, Liu K, Tian C, Yang L, Li X, Ren J, Packer L, Cotman CW, Liu J. R-alpha-Lipoic acid and acetyl-L-carnitine complementarily promote mitochondrial biogenesis in murine 3T3-L1 adipocytes. *Diabetologia* (2008a) 51(1) 165-74.

Shen W, Liu K, Tian C, Yang L, Li X, Ren J, Packer L, Head E, Sharman E, Liu J. Protective effects of R-alpha-lipoic acid and acetyl-L-carnitine in MIN6 and isolated rat islet cells chronically exposed to oleic acid. *J Cell Biochem* (2008b).

Shen W, Hao J, Tian C, Ren J, Yang L, Li X, Luo C, Cotman CW, Liu J. A combination of nutriment improves mitochondrial biogenesis and function in skeletal muscle of type 2 diabetic Goto-Kakizaki rats. PLoS ONE (2008c) 3(6) e2328.

Zhang WJ, Bird KE, McMillen TS, LeBoeuf RC, Hagen TM, Frei B. Dietary alpha-lipoic acid supplementation inhibits atherosclerotic lesion development in apolipoprotein E-deficient and apolipoprotein E/low-density lipoprotein receptor-deficient mice. Circulation (2008) 117(3) 421-8.

Carlson DA, Smith AR, Fischer SJ, Young KL, Packer L. The plasma pharmacokinetics of R-(+)-lipoic acid administered as sodium R-(+)-lipoate to healthy human subjects. Altern Med Rev (2007)12(4) 343-51.

Jia L, Liu Z, Sun L, Miller SS, Ames BN, Cotman CW, Liu J. Acrolein, a toxicant in cigarette smoke, causes oxidative damage and mitochondrial dysfunction in RPE cells: protection by (R)-alpha-lipoic acid. Invest Ophthalmol Vis Sci (2007) 48(1) 339-48.

Artwohl M, Muth K, Kosulin K, de Martin R, Hölzenbein T, Rainer G, Freudenthaler A, Huttary N, Schmetterer L, Waldhäusl WK, Baumgartner-Parzer SM. R-(+)-alpha-lipoic acid inhibits endothelial cell apoptosis and proliferation: involvement of Akt and retinoblastoma protein/E2F-1. Am J Physiol Endocrinol Metab (2007) 293(3) E681-9.

Cakatay U. Should it be safer to use a redox couple, both with (R)-alpha-lipoic acid combined with (R)-dihydrolipoic acid for avoiding prooxidant action of alpha-lipoic acid? Med Hypotheses (2007) 68(5) 1178.

Jenner P, Seaton TA, Marsden CD. Altered 14 c-deoxyglucose incorporation in rat brain following treatment with alpha-lipoic acid. Chapter 16 in Lipoic Acid in Health and Disease. eds. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (2007) 259-268.

Long J, Wang X, Gao H, Liu Z, Liu C, Miao M, Cui X, Packer L, Liu J. D-galactose toxicity in mice is associated with mitochondrial dysfunction: protecting effects of mitochondrial nutrient R-alpha-lipoic acid. *Biogerontology* (2007) 8(3) 373-81.

May JM, Qu ZC, Nelson DJ. Uptake and reduction of alpha-lipoic acid by human erythrocytes. *Clin Biochem* (2007) 40(15) 1135-42.

Vossler S, Füllert S, Schneider F, Haak E, Haak T, Samigullin R, Tritschler H, Tooke JE, Konrad T. Pharmacodynamic effects of orally administered dextrothioslipoic acid on endothelial function in type 2-diabetic patients. *Int J Clin Pharmacol Ther* (2007) 45(7) 385-93.

Holmquist L, Stuchbury G, Berbaum K, Muscat S, Young S, Hager K, Engel J, Munch G. Lipoic acid as a novel treatment for Alzheimer's disease and related dementias. *Pharmacol Ther* (2007) 113(1) 154-64.

Price SA, Gardiner NJ, Duran-Jimenez B, Zeef LA, Obrosova IG, Tomlinson DR. Thioredoxin interacting protein is increased in sensory neurons in experimental diabetes. *Brain Res* (2006) 1116(1) 206-14.

Cui X, Zuo P, Zhang Q, Li X, Hu Y, Long J, Packer L, Liu J. Chronic systemic D-galactose exposure induces memory loss, neurodegeneration, and oxidative damage in mice: protective effects of R-alpha-lipoic acid. *J Neurosci Res* (2006) 83(8) 1584-90.

May JM, Qu ZC, Nelson DJ. Cellular disulfide-reducing capacity: an integrated measure of cell redox capacity. *Biochem Biophys Res Commun* (2006) 344(4) 1352-9.

Lin J, Bierhaus A, Bugert P, Dietrich N, Feng Y, Vom Hagen F, Nawroth P, Brownlee M, Hammes HP. Effect of R-(+)-alpha-lipoic acid on experimental diabetic retinopathy. *Diabetologia* (2006) 49(5) 1089-96.

Henriksen EJ. Exercise training and the antioxidant alpha-lipoic acid in the treatment of insulin resistance and type 2 diabetes. *Free Radic Biol Med* (2006) 40(1) 3-12.

Wessner B, Strasser EM, Manhart N, Roth E. Supply of R-alpha-lipoic acid and glutamine to casein-fed mice influences the number of B lymphocytes and tissue glutathione levels during endotoxemia. *Wien Klin Wochenschr* (2006) 118(3-4) 100-7.

Suh JH, Moreau R, Heath SH, Hagen TM. Dietary supplementation with (R)-alpha-lipoic acid reverses the age-related accumulation of iron and depletion of antioxidants in the rat cerebral cortex. *Redox Rep* (2005) 10(1) 52-60.

Webster J, Urban C, Berbaum K, Loske C, Alpar A, Gärtner U, de Arriba SG, Arendt T, Münch G. The carbonyl scavengers aminoguanidine and tenilsetam protect against the neurotoxic effects of methylglyoxal. *Neurotox Res* (2005) 7(1-2) 95-101.

Voloboueva LA, Liu J, Suh JH, Ames BN, Miller SS. (R)-alpha-lipoic acid protects retinal pigment epithelial cells from oxidative damage. *Invest Ophthalmol Vis Sci* (2005) 46(11) 4302-10.

Kulhanek-Heinz S. Characterization of Anti-apoptotic signaling pathways in heptaocytes activated by R-alpha lipoic Acid and atrial Natriuretic Peptide. Ph.D. Dissertation Ludwig-Maximilians-University of Munich (2004).

Mathews CE, Bagley R, Leiter EH. ALS/Lt: a new type 2 diabetes mouse model associated with low free radical scavenging potential. *Diabetes* (2004) 53 Suppl 1 S125-9.

Walgren JL, Amani Z, McMillan JM, Locher M, Buse MG. Effect of R(+)-alpha-lipoic acid on pyruvate metabolism and fatty acid oxidation in rat hepatocytes. *Metabolism*. (2004) 53(2)165-73.

Saengsirisuwan V, Perez FR, Sloniger JA, Maier T, Henriksen EJ. Interactions of exercise training and alpha-lipoic acid on insulin signaling in skeletal muscle of obese Zucker rats. *Am J Physiol Endocrinol Metab* (2004) 287(3) E529-36.

Frolich L, Gotz ME, Weinmuller M, Youdim MB, Barth N, Dirr A, Gsell W, Jellinger K, Beckmann H, Riederer P. (R)-, but not (S)-alpha lipoic acid stimulates deficient brain pyruvate dehydrogenase complex in

vascular dementia, but not in Alzheimer dementia. *J Neural Transm* (2004) 111 (3) 295-310.

Korotchkina LG, Sidhu S, Patel MS. R-lipoic acid inhibits mammalian pyruvate dehydrogenase kinase. *Free Radic Res* (2004) 38(10) 1083-92.

Suh JH, Wang H, Liu RM, Liu J, Hagen TM. (R)-alpha-lipoic acid reverses the age-related loss in GSH redox status in post-mitotic tissues: evidence for increased cysteine requirement for GSH synthesis. *Arch Biochem Biophys* (2004) 423(1) 126-35.

Suh JH, Shenvi SV, Dixon BM, Liu H, Jaiswal AK, Liu RM, Hagen TM. Decline in transcriptional activity of Nrf2 causes age-related loss of glutathione synthesis, which is reversible with lipoic acid. *Proc Natl Acad Sci U S A* (2004) 101(10) 3381-6.

Bunik VI. 2-Oxo acid dehydrogenase complexes in redox regulation. *Eur J Biochem* (2003) 270(6) 1036-42.

Teachey MK, Taylor ZC, Maier T, Saengsirisuwan V, Sloniger JA, Jacob S, Klatt MJ, Ptock A, Kraemer K, Hasselwander O, Henriksen EJ. Interactions of conjugated linoleic acid and lipoic acid on insulin action in the obese Zucker rat. *Metabolism* (2003) 52(9) 1167-74.

Henriksen EJ, Saengsirisuwan V. Exercise training and antioxidants: relief from oxidative stress and insulin resistance. *Exerc Sport Sci Rev* (2003) 31(2) 79-84.

Krone D. The Pharmacokinetics and Pharmacodynamics of R-(+)-alpha lipoic acid. Ph.D. Thesis, Johann Wolfgang Goethe University, Frankfurt am Main Germany (2002). English translation available from GeroNova Research.

Hagen TM, Moreau R, Suh JH, Visioli F. Mitochondrial decay in the aging rat heart: evidence for improvement by dietary supplementation with acetyl-L-carnitine and/or lipoic acid. *Ann N Y Acad Sci* (2002) 959 491-507.

Hagen TM, Liu J, Lykkesfeldt J, Wehr CM, Ingersoll RT, Vinarsky V, Bartholomew JC, Ames BN. Feeding acetyl-L-carnitine and lipoic acid to old rats significantly improves metabolic function while decreasing oxidative stress. *Proc Natl Acad Sci U S A* (2002) 99(4) 1870-5.

Bharat S, Cochran BC, Hsu M, Liu J, Ames BN, Andersen JK. Pre-treatment with R-lipoic acid alleviates the effects of GSH depletion in PC12 cells: implications for Parkinson's disease therapy. *Neurotoxicology* (2002) 23(4-5) 479-86.

Moini H, Tirosh O, Park YC, Cho KJ, Packer L. R-alpha-lipoic acid action on cell redox status, the insulin receptor, and glucose uptake in 3T3-L1 adipocytes. *Arch Biochem Biophys* (2002) 397(2) 384-91.

Liu J, Head E, Gharib AM, Yuan W, Ingersoll RT, Hagen TM, Cotman CW, Ames BN. Memory loss in old rats is associated with brain mitochondrial decay and RNA/DNA oxidation: partial reversal by feeding acetyl-L-carnitine and/or R-alpha -lipoic acid. *Proc Natl Acad Sci U S A* (2002) 99(4) 2356-61.

Liu J, Atamna H, Kuratsune H, Ames BN. Delaying brain mitochondrial decay and aging with mitochondrial antioxidants and metabolites. *Ann N Y Acad Sci* (2002) 959 133-66.

Liu J, Killilea DW, Ames BN. Age-associated mitochondrial oxidative decay: improvement of carnitine acetyltransferase substrate-binding affinity and activity in brain by feeding old rats acetyl-L- carnitine and/or R-alpha -lipoic acid. *Proc Natl Acad Sci* (2002) 99(4) 1876-81.

Stitt A, Gardiner TA, Alderson NL, Canning P, Frizzell N, Duffy N, Boyle C, Januszewski AS, Chachich M, Baynes JW, Thorpe SR. The AGE inhibitor pyridoxamine inhibits development of retinopathy in experimental diabetes. *Diabetes* (2002) 51(9) 2826-32.

Saengsirisuwan V, Perez FR, Kinnick TR, Henriksen EJ. Effects of exercise training and antioxidant R-ALA on glucose transport in insulin-sensitive rat skeletal muscle. *J Appl Physiol* (2002) 92(1) 50-8.

Anderwald C, Koca G, Furnsinn C, Waldhausl W, Roden M. Inhibition of glucose production and stimulation of bile flow by R (+)-alpha-lipoic acid enantiomer in rat liver. *Liver* (2002) 22(4) 355-62.

Konrad D, Somwar R, Sweeney G, Yaworsky K, Hayashi M, Ramlal T, Klip A. The antihyper-glycemic drug alpha-lipoic acid stimulates glucose uptake via both GLUT4 translocation and GLUT4 activation: potential role of p38 mitogen-activated protein kinase in GLUT4 activation. *Diabetes* (2001) 50(6) 1464-71.

Deuther-Conrad W, Loske C, Schinzel R, Dringen R, Riederer P, Munch G. Advanced glycation endproducts change glutathione redox status in SH-SY5Y human neuroblastoma cells by a hydrogen peroxide dependent mechanism. *Neurosci Lett* (2001) 312(1) 29-32.

Maddux BA, See W, Lawrence JC Jr, Goldfine AL, Goldfine ID, Evans JL. Protection against oxidative stress-induced insulin resistance in rat L6 muscle cells by micromolar concentrations of alpha-lipoic acid. *Diabetes* (2001) 50(2) 404-10.

Suh JH, Shigeno ET, Morrow JD, Cox B, Rocha AE, Frei B, Hagen TM. Oxidative stress in the aging rat heart is reversed by dietary supplementation with (R)-(alpha)-lipoic acid. *FASEB J* (2001) 15(3) 700-6.

Yaworsky K, Somwar R, Ramlal T, Tritschler HJ, Klip A. Engagement of the insulin-sensitive pathway in the stimulation of glucose transport by alpha-lipoic acid in 3T3-L1 adipocytes *Diabetologia* (2000) 43(3) 294-303.

Walter PB, Tirosh O, Sen C, Packer L, Ames BN. The effect of R-lipoic acid and its lipoamide analogue on mitochondrial function during oxidant stress: thiol regulation of the permeability transition. *Oxygen Club Poster* (2000).

Lockhart B, Jones C, Cuisinier C, Villain N, Peyroulan D, Lestage P. Inhibition of L-homocysteic acid and buthionine sulfoximine-mediated neurotoxicity in rat embryonic neuronal cultures with alpha-lipoic acid enantiomers. *Brain Res* (2000) 855(2) 292-7.

Hagen TM, Vinarsky V, Wehr CM, Ames BN. (R)-alpha-lipoic acid reverses the age-associated increase in susceptibility of hepatocytes to tert-butylhydroperoxide both in vitro and in vivo. *Antioxid Redox Signal* (2000) 2(3) 473-83.

Artwohl M, Schmetterer L, Rainer G, Waldhausl W, Baumgartner-Parzer S. Modulation by antioxidants of endothelial apoptosis, proliferation and associated gene/protein expression. *Euro. Association for the study of diabetes program* 36 (2000).

Kishi Y, Schmelzer JD, Yao JK, Zollman PJ, Nickander KK, Tritschler HJ, Low PA. Alpha-lipoic acid: effect on glucose uptake, sorbitol pathway, and energy metabolism in experimental diabetic neuropathy. *Diabetes* (1999) 48(10) 2045-51.

Khanna S, Roy S, Packer L, Sen CK. Cytokine-induced glucose uptake in skeletal muscle: redox regulation and the role of alpha-lipoic acid. *Am J Physiol* (1999) 276(5 Pt 2) R1327-33.

Hagen TM, Ingersoll RT, Lykkesfeldt J, Liu J, Wehr CM, Vinarsky V, Bartholomew JC, Ames AB. (R)-alpha-lipoic acid-supplemented old rats have improved mitochondrial function, decreased oxidative damage, and increased metabolic rate. *FASEB J* (1999) 13(2) 411-8.

Hong YS, Jacobia SJ, Packer L, Patel MS. The inhibitory effects of lipoic compounds on mammalian pyruvate dehydrogenase complex and its catalytic components. *Free Radic Biol Med* (1999) 26(5-6) 685-94.

Cameron NE, Cotter MA, Horrobin DH, Tritschler HJ. Effects of alpha-lipoic acid on neuro-vascular function in diabetic rats: interaction with essential fatty acids. *Diabetologia* (1998) 41(4) 390-9.

Lykkesfeldt J, Hagen TM, Vinarsky V, Ames BN. Age-associated decline in ascorbic acid concentration, recycling, and biosynthesis in rat hepatocytes--reversal with (R)-alpha-lipoic acid supplementation. *FASEB J* (1998) 12(12) 1183-9.

Freisleben HJ, Neeb A, Lehr F, Ackermann H. Influence of selegiline and lipoic acid on the life expectancy of immunosuppressed mice. *Arzneimittelforschung* (1997) 47(6) 776-80.

Biewenga G, Haenen G, Groen BH, Biewenga JE, Van Grondelle R, Gast A. Combined non-enzymatic and enzymatic reduction favors bioactivation of racemic lipoic acid: an advantage of a racemic drug? *Chirality* (1997) 9 362-366.

Raddatz G, Bisswanger H. Receptor site and stereospecificity of dihydrolipoamide dehydrogenase for R- and S-lipoamide: a molecular modeling study. *Journal of Biotechnology* (1997) 58(2) 89-100.

Biewenga GP, Vriesman MF, Haenen GRMM, Bast A. Lipoic Acid: A Pharmacochemical Study. Ph.D. thesis. *Academisch Proefschrift, Vrije Universiteit, Amsterdam.* (1997A)

Henricksen EJ. Lipoate in an animal model of insulin resistance: the obese Zucker rat. Chapter 18 in *Lipoic Acid in Health and Disease*. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (1997) 283-294.

Luepke NP, Baron-Ruppert G, Meier H, Wolf T. Lipoate effects in an animal-free model. Chapter 8 in *Lipoic Acid in Health and Disease*. eds. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (1997) 131-143.

Jacob S, Hendriksen EJ. Metabolic alterations in non-insulin-dependent diabetes mellitus. Chapter 15 in *Lipoic Acid in Health and Disease*. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (1997) 243-258.

Streeper RS, Henriksen EJ, Jacob S, Hokama JY, Fogt DL, Tritschler HJ. Differential effects of lipoic acid stereoisomers on glucose metabolism in insulin-resistant skeletal muscle. *Am J Physiol* (1997) 273 (1 Pt 1) E185-91.

Trevithick JR.  $\alpha$ -Lipoic acid and cataract risk reduction. Chapter 14 in *Lipoic Acid in Health and Disease*. Fuchs J, Packer L, Zimmer G,

eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (1997) 227-242

Tsakiridis T, Ewart HS, Ramlal T, Volchuk A, Klip A. Alpha-lipoic acid stimulates glucose transport into muscle and adipose cells in culture: comparison with the actions of insulin and dinitrophenol. Chapter 5 in Lipoic Acid in Health and Disease. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (1997) 87-98.

Zimmer G. Overview of the role of lipoate in the enzyme complexes of energy metabolism and reducing equivalents. Chapter 4 in Lipoic Acid in Health and Disease. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. New York, Basel, Hong Kong (1997) 67-86.

Zimmer G. Protection from myocardial ischemia/reperfusion injury. Chapter 12 in Lipoic Acid in Health and Disease. Fuchs J, Packer L, Zimmer G, eds. Marcel Dekker, Inc. York, Basel, Hong Kong (1997) 193-204

Estrada DE, Ewart HS, Tsakiridis T, Volchuk A, Ramlal T, Tritschler H, Klip A. Stimulation of glucose uptake by the natural coenzyme alpha-lipoic acid/thioctic acid: participation of elements of the insulin signaling pathway. *Diabetes* (1996) 45(12) 1798-804.

Seaton TA, Jenner P, Marsden CD. The isomers of thioctic acid alter C-deoxyglucose incorporation in rat basal ganglia. *Biochem Pharmacol* (1996) 51(7) 983-6.

Nickander KK, McPhee BR, Low PA, Tritschler H. Alpha-lipoic acid: antioxidant potency against lipid peroxidation of neural tissues in vitro and implications for diabetic neuropathy. *Free Radic Biol Med* (1996) 21(5) 631-9.

Biewenga GP, Dorstijn MA, Verhagen JV, Haenen GR, Bast A. Reduction of lipoic acid by lipoamide dehydrogenase. *Biochem Pharmacol* (1996) 51(3) 233-8.

Maitra I, Serbinova E, Tritschler HJ, Packer L. Stereospecific effects of R-lipoic acid on buthionine sulfoximine-induced cataract formation

in newborn rats. *Biochem Biophys Res Commun* (1996) 221(2) 422-9.

Wolz P, Krieglstein J. Neuroprotective effects of alpha-lipoic acid and its enantiomers demonstrated in rodent models of focal cerebral ischemia. *Neuropharmacology* (1996) 35(3) 369-75.

Loeffelhardt S, Borbe HO, Locher M, Bisswanger H. In vivo incorporation of lipoic acid enantiomers and homologues in the pyruvate dehydrogenase complex from *Escherichia coli*. *Biochim Biophys Acta* (1996) 1297(1) 90-8.

Müller U, Krieglstein J. Prolonged pretreatment with alpha-lipoic acid protects cultured neurons against hypoxic, glutamate-, or iron-induced injury. *J Cereb Blood Flow Metab* (1995) 15(4) 624-30.

Bunik V, Shoubnikova A, Loeffelhardt S, Bisswanger H, Borbe HO, Follmann H. Using lipoate enantiomers and thioredoxin to study the mechanism of the 2-oxoacid-dependent dihydrolipoate production by the 2-oxoacid dehydrogenase complexes. *FEBS Lett* (1995) 371(2) 167-70.

Kilic F, Handelman GJ, Serbinova E, Packer L, Trevithick JR. Modelling cortical cataractogenesis 17: in vitro effect of alpha-lipoic acid on glucose-induced lens membrane damage, a model of diabetic cataractogenesis. *Biochem Mol Biol Int* (1995) 37(2) 361-70.

Zimmer G, Mainka L, Ulrich H. ATP synthesis and ATPase activities in heart mitochondria under influence of R- and S-enantiomers of lipoic acid. *Methods Enzymol* (1995) 251 332-40.

Loeffelhardt S, Bonaventura C, Locher M, Borbe HO, Bisswanger H. Interaction of alpha-lipoic acid enantiomers and homologues with the enzyme components of the mammalian pyruvate dehydrogenase complex. *Biochem Pharmacol* (1995) 50(5) 637-46.

Hofmann M, Mainka P, Tritschler H, Fuchs J, Zimmer G. Decrease of red cell membrane fluidity and -SH groups due to hyperglycemic conditions is counteracted by alpha-lipoic acid. *Arch Biochem Biophys* (1995) 324(1) 85-92.

Ou P, Tritschler HJ, Wolff SP. Thioctic (lipoic) acid: a therapeutic metal-chelating antioxidant? *Biochem Pharmacol* (1995) 50(1) 123-6.

Constantinescu A, Pick U, Handelman GJ, Haramaki N, Han D, Podda M, Tritschler HJ, Packer L. Reduction and transport of lipoic acid by human erythrocytes. *Biochem Pharmacol* (1995) 50(2) 253-61.

Pick U, Haramaki N, Constantinescu A, Handelman GJ, Tritschler HJ, Packer L. Glutathione reductase and lipoamide dehydrogenase have opposite stereospecificities for alpha-lipoic acid enantiomers. *Biochem Biophys Res Commun* (1995) 206(2) 724-30.

Fuchs J, Milbradt R. Antioxidant inhibition of skin inflammation induced by reactive oxidants: evaluation of the redox couple dihydrolipoate/lipoate. *Skin Pharmacol* (1994) 7(5) 278-84.

Kawabata T, Packer L. Alpha-lipoate can protect against glycation of serum albumin, but not low density lipoprotein. *Biochem Biophys Res Commun* (1994) 203(1) 99-104.

Schempp H, Ulrich H, Elstner EF. Stereospecific reduction of R(+)-thioctic acid by porcine heart lipoamide dehydrogenase/diaphorase. *Z Naturforsch* (1994) 49(9-10) 691-2.

Lang G. In Vitro Metabolism of  $\alpha$ -Lipoic Acid Especially Taking Enantioselective Biotransformation into Account. Ph.D. Thesis, University of Münster, Münster, Germany (1992).

Oehring R, Bisswanger H. Incorporation of the enantiomers of lipoic acid into the pyruvate dehydrogenase complex from *Escherichia coli* in vivo. *Biol Chem Hoppe Seyler* (1992) 373(6) 333-5.

Yang YS, Frey PA. Dihydrolipoyl transacetylase of *Escherichia coli*. Formation of 8-S-acetyldihydrolipoamide. *Biochemistry* (1986) 25(25) 8173-8.

Gal EM. Reversal of selective toxicity of (-)-alpha-lipoic acid by thiamine in thiamine-deficient rats. *Nature* (1965) 207(996) 535.

Deitrich RA, Hellerman L. Pyruvate metabolism v. Pyruvate utilization by mitochondria of rat brain. *J Biol Chem* (1964) 239 2735-40.

Takenouchi K, Aso K, Kawashima S. Studies on the metabolism of thioctic acid in skin diseases. (II). Loading test of thioctic acid in various skin diseases. *J Vitaminology* (1962) 8 99-114.

Gal EM, Razevska DE. Studies on the in vivo metabolism of lipoic acid. 1. The fate of DL-lipoic acid-S35 in normal and thiamine-deficient rats. *Arch Biochem Biophys* (1960) 89 253-61.

Sanadi DR, Langley M, Searls RL. alpha-Ketoglutaric dehydrogenase. VI. Reversible oxidation of dihydrothioctamide by diphosphopyridine nucleotide. *J Biol Chem* (1959) 234(1) 178-82.

Reiss OK. Pyruvate metabolism. II. Restoration of pyruvate utilization in heart sarcosomes by alpha-(+)-lipoic acid. *J Biol Chem* (1958) 233(4) 789-93.

Reiss OK, Hellerman L. Pyruvate utilization in heart sarcosomes; inhibition by an arsenoso compound and reactivation by lipoic acid. *J Biol Chem* (1958) 231(1) 557-69.

Acker DS, Wayne WJ. Optically Active and Radioactive  $\alpha$ -Lipoic Acids. *JACS* (1957) 79 6483.

Sanadi DR, Searls RL. Reversible reduction of thioctamide catalyzed by the alpha-ketoglutaric dehydrogenase complex. *Biochim Biophys Acta* (1957) 24(1) 220-1.

Walton W, Wagner A, Bachelor F, Peterson L, Holly FW, Folkers K. Synthesis of (+)- $\alpha$ -Lipoic Acid and its Optical Antipode. *JACS* (1955) 77 5144.

Walton W, Wagner A, Peterson L, Holly FW, Folkers K. The Synthesis of (+)-Lipoic Acid and its optical antipode. *JACS* (1954) 76 47 48.

