

"Treatment of periodontitis with CoEnzyme Q10 [was so 'extraordinarily effective' that it] should be considered as adjunctive treatment with current dental practice."³⁵

"...topical application of CoQ10 improves adult periodontitis not only as a sole treatment but also in combination with traditional nonsurgical periodontal therapy."³⁶

Major Risk Factors Associated with CoQ10 Deficiency

Aging

B12, C, &/or selenium deficiency, e.g.)
Bleeding of the gums with light brushing or probing.

Chronic gum disease (gingivitis, periodontitis)
Chronic intense exercise

Congestive heart failure
Coronary artery disease

Elevated cholesterol

Heart disease & heart surgery

High animal protein diet

High blood pressure (essential, systolic &/or diastolic)

HIV/AIDS

Hormone dependent cancers (breast cancer, e.g.)

Low dietary intake of vegetables

Nutrient deficient diet (B2, B3, B5, B6, folic acid,

Poor or slow healing of diseased gums.

Swollen &/or infected gums.

Type 2 diabetes, insulin resistance

Use of anti-hypertensive medications (see list below)

Prescription Medications That May Increase Risk of CoQ10 Deficiency

Adriamycin

Anti-Diabetic Drugs:

Diabeta, Glynase, Tolinase, Micronase, Dymmelor

Beta Blockers:

Inderal, Lopressor, Tenormin, Visken

Blood Pressure Medications:

Diazoxide, Propranolol, Metoprolol,
Hydrochlorothiazide, Hydralazine, Clonidine

Cholesterol Lowering Drugs:

Lescol, Mevacor, Pravachol, Zocor

Lipitor

L-Dopa

Lovastatin

Major Tranquilizers:

Navane, Mellaril, Prolixin, Thorazine

Tricyclic Antidepressants:

Asendin, Elavil, Etrafon, Norpramin, Pamelor,
Sinequan, Tofranil

Medical Conditions Associated with Low Serum or Tissue Levels of CoQ10

Alzheimer's disease

Asthma

Candidiasis

Chronic fatigue syndrome

Congestive heart failure/dilated cardiomyopathy

- Angina pectoris (chest pain due to heart disease)

- **Atherosclerosis**

- Coronary bypass surgery/heart surgery

- **Mitral valve prolapse**

Elevated total & **LDL cholesterol**

Heart disease

High blood pressure

HIV/AIDS

Hormone-dependent **cancers (breast cancer,** e.g.)

Insulin resistance, which is often associated with:

- adult-onset diabetes/elevated fasting blood sugar

- abdominal/central obesity

- high blood pressure

- elevated serum cholesterol and triglycerides

- heart disease

- **sleep apnea**

- polycystic ovary disease

- certain hormone-dependent cancers

Kearns-Sayre syndrome (a chronic progressive ophthalmoplegia beginning in childhood, associated with short stature, hearing loss, and heart conduction defects)

Leukemia (animal studies)

Male Infertility

Mitochondrial encephalomyopathy

Multiple sclerosis

Muscular dystrophy

Ophthalmoplegia (paralysis of some or all eye muscles)

Parkinson's disease

Periodontal disease

- Gingivitis

- Periodontitis

- Tooth loss

- Gum and tooth pain

- Tooth abscess

CoQ10 Deficiency Warning Signs & Symptoms

Angina (severe chest pain, crushing chest pressure, e.g.)

Chronic coughing, wheezing, chest tightness

Chronic fatigue, lack of energy and vitality

Elevated blood sugar & insulin levels (insulin resistance, type 2 diabetes--often associated with high blood pressure, elevated cholesterol & triglycerides, sleep apnea, & obesity)

Elevated cholesterol

Heart disease, scheduled for heart surgery

High blood pressure, systolic &/or diastolic

HIV infection/AIDS

Muscle weakness

Periodontal Disease:

- Gingivitis: Bleeding gums, gums that bleed with light brushing or probing, swollen gums, reddened gums

- Periodontitis: Bleeding and pus with probing at the gum-tooth margins, chronic inflammation of gums, infection, often with abscess formation, premature loss of permanent teeth

- Diseased gums slow to heal

- Chronic dental and gum pain

Poor muscle work tolerance (early muscle exhaustion with heavier or more intense workloads)

Progressive muscle weakness with seizures

Selenium deficiency

Shortness of breath, difficulty breathing at rest

Vitamin deficiencies (C, B2, B3, B5, B6, folic acid &/or B12

Diets That Increase Risk of CoQ10 Deficiency

Diets high in animal protein, low in vegetables

Diets deficient in riboflavin (vitamin B2), niacin (B3), pantothenic acid (B5) pyridoxine (B6), folic acid, B12, vitamin C &/or trace minerals such as selenium.

For more information on CoQ10, go to www.life-span.com



COENZYME Q10 (CoQ10) DEFICIENCY & RISK FACTORS

SCIENTIFIC REFERENCES

- Langsjoen H, et al., Usefulness of coenzyme Q-10 in clinical cardiology: A long term study. *Mol Aspects Med* 15, (Suppl.), S165-S175, 1994.
- Baggio E, et al., Italian multicenter study on the safety and efficacy of coenzyme Q-10 as adjunctive therapy in heart failure. CoQ-10 Drug Surveillance Investigators. *Mol Aspects Med* 15, (Suppl.), S287-S294, 1994.
- Hamada M, Kazatani Y, Ochi T, et al., Correlation between serum CoQ-10 level and myocardial contractility in hypertensive patients. In: *Biomedical and Clinical Aspects of Coenzyme Q*, Vol. 4. Folkers K and Yamamura Y (eds.). Elsevier Science Publ., Amsterdam, 1984, pp. 263-270.
- Morita K, et al., *Journal of Thoracic and Cardiovascular Surgery*, 1995;110:1221-7.
- Digiesi V, et al., Coenzyme Q-10 in essential hypertension. *Mol Aspects Med* 15, (Suppl.), S257-S263, 1994.
- Langsjoen PH, Vadhanavikit S, and Folkers K, Response of patients in classes III and IV of cardiomyopathy to therapy in a blind and crossover trial with coenzyme Q-10. *Proc Natl Acad Sci* 82, 4240, 1985.
- Mayell M, How to Use Herbs and Nutrients to Stay Well, 43.
- Lockwood K, Moesgaard S, and Folkers K, Partial and complete regression of breast cancer in patients in relation to dosage of coenzyme Q-10. *Biochem Biophys Res Comm* 199, 1504-1508, 1994.
- Balch J and Balch P, Prescription for Nutritional Healing, 10.
- Balch J and Balch P, Prescription for Nutritional Healing, 10.
- Vanfraechem JHP and Folkers K, Coenzyme Q-10 and physical performance. In: *Biomedical and Clinical Aspects of Coenzyme Q-10*, Vol. 3. Folkers K and Yamamura Y (eds.) Elsevier/ North-Holland Biomedical Press, Amsterdam, 1981, 235-241.
- Balch J and Balch P, Prescription for Nutritional Healing.
- Folkers K Institute for Biomedical Research, University of Texas at Austin 78712, USA. Relevance of the biosynthesis of coenzyme Q10 and of the four bases of DNA as a rationale for the molecular causes of cancer and a therapy. *Biochem Biophys Res Commun*, 1996 Jul, 224:2, 358-61
- Vadhanavikit S; Ganther HE Department of Preventive Medicine and Community Health, University of Texas Medical Branch, Galveston 77555, USA. Selenium deficiency and decreased coenzyme Q levels. *Mol Aspects Med*, 1994, 15 Suppl., s103-7
- Kishi H; Kishi T; Folkers K Bioenergetics in clinical medicine. III. Inhibition of coenzyme Q10-enzymes by clinically used anti-hypertensive drugs. *Res Commun Chem Pathol Pharmacol*, 1975 Nov, 12:3, 533-40
- Bertazzoli C; Sala L; Ballerini L; Watanabe T; Folkers K Effect of adriamycin on the activity of the succinate dehydrogenase-coenzyme Q10 reductase of the rabbit myocardium. *Res Commun Chem Pathol Pharmacol*, 1976 Dec, 15:4, 797-800
- Folkers K; Langsjoen P; Willis R; Richardson P; Xia LJ; Ye CQ; Tamagawa H University of Texas, Austin 78712. Lovastatin decreases coenzyme Q levels in humans. *Proc Natl Acad Sci*, 1990 Nov, 87:22, 8931-4
- Mortensen SA Department of Cardiology and Internal Medicine, Rigshospitalet B 2142, State University Hospital, Copenhagen. Perspectives on therapy of cardiovascular diseases with coenzyme Q10 (ubiquinone). *Clin Investig*, 1993, 71:8 Suppl, S116-23
- Manzoli U; Rossi E; Littarru GP; Frustaci A; Lippa S; Oradei A; Aureli V Institute of Cardiology, Catholic University, Rome, Italy. Coenzyme Q10 in dilated cardiomyopathy. *Int J Tissue React*, 1990, 12:3, 173-8
- Judy WV; Stogsdill WW; Folkers K Department of Medical Research and Anesthesiology, St. Vincent Hospital, Indianapolis. Myocardial preservation by therapy with coenzyme Q10 during heart surgery. *Clin Investig*, 1993, 71:8 Suppl, S155-61
- Folkers K; Drzewoski J; Richardson PC; Ellis J; Shizukuishi S; Baker L
- Bioenergetics in clinical medicine. XVI. Reduction of hypertension in patients by therapy with coenzyme Q10. *Res Commun Chem Pathol Pharmacol*, 1981 Jan, 31:1, 129-40
- Pignatti C; Cocchi M; Weiss H Coenzyme Q10 levels in rat heart of different age. *Biochem Exp Biol*, 1980, 16:1, 39-42
- Götz ME; Gerstner A; Harth R; Dirr A; Janetzky B; Kuhn W; Riederer P; Gerlach M Clinical Neurochemistry, Department of Psychiatry, University of Würzburg, Federal Republic of Germany. Altered redox state of platelet coenzyme Q10 in Parkinson's disease. *J Neural Transm*, 2000, 107:1, 41-8
- Bonetti A; Solito F; Carosino G; Bargossi AM; Fiorella PL Chair of Sport Medicine, University of Parma, Italy. Effect of ubidecarenone oral treatment on aerobic power in middle-aged trained subjects. *J Sports Med Phys Fitness*, 2000 Mar, 40:1, 51-7
- Werbach MR UCLA School of Medicine, California, USA. Nutritional strategies for treating chronic fatigue syndrome. *Altern Med Rev*, 2000 Apr, 5:2, 93-108
- Insulin resistance: lifestyle and nutritional interventions. *Altern Med Rev*, 2000 Apr, 5:2, 109-32
- Sinclair S Green Valley Health, Hagerstown, MD 21742, USA. Male infertility: nutritional and environmental considerations. *Altern Med Rev*, 2000 Feb, 5:1, 28-38
- Boitier E; Degoul F; Desguerre I; Charpentier C; François D; Ponsot G; Diry M; Marsac C INSERM U75, Faculté de Médecine Necker-Enfants Malades, Paris, France. A case of mitochondrial encephalomyopathy associated with a muscle coenzyme Q10 deficiency. *J Neurol Sci*, 1998, 156:1, 41-6
- Folkers K; Langsjoen P; Nara Y; Muratsu K; Komorowski J; Richardson PC; Smith TH Institute for Biomedical Research, University of Texas, Austin 78712. Biochemical deficiencies of coenzyme Q10 in HIV-infection and exploratory treatment. *Biochem Biophys Res Commun*, 1988 Jun, 153:2, 888-96
- Folkers K; Brown R; Judy WV; Morita M University of Texas, Austin. Survival of cancer patients on therapy with coenzyme Q10. *Biochem Biophys Res Commun*, 1993 Apr, 192:1, 241-5
- Jolliet P; Simon N; Barré J; Pons JY; Boukef M; Paniel BJ; Tillement JP Service Hospitalo-Universitaire de Pharmacologie, Centre Hospitalier Intercommunal, Crèteil, France. Plasma coenzyme Q10 concentrations in breast cancer: prognosis and therapeutic consequences. *Int J Clin Pharmacol Ther*, 1998 Sep, 36:9, 506-9
- Zierz S; Jahns G; Jerusalem F Neurologische Universitätsklinik, Bonn, Federal Republic of Germany Coenzyme Q in serum and muscle of 5 patients with Kearns-Sayre syndrome and 12 patients with ophthalmoplegia. *J Neurol*, 1989 Feb, 236:2, 97-101
- Hansen IL et al. Bioenergetics in clinical medicine. IX. Gingival and leucocytic deficiencies of coenzyme Q10 in patients with periodontal disease. *Res Commun Chem Pathol Pharmacol*, 1976 Aug; volume 14:4: pages 729-738.
- Wilkinson EG et al. Bioenergetics in clinical medicine. II. Adjunctive treatment with coenzyme Q in periodontal therapy. *Res Commun Chem Pathol Pharmacol*, 1975 September; volume 12:1: pages 111-123.
- Hanioka T; Folkers K et al. Department of Preventive Dentistry, Osaka University Faculty of Dentistry, Japan. Effect of topical application of coenzyme Q10 on adult periodontitis. *Mol Aspects Med*, 1994; volume 15 Suppl: pages s241-248.

