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MEDICAL UPDATES

Studies from throughout the world that can help you live longer

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1. **Stinging nettle root vs. prostate cancer**

Full source: *PLANTA MEDICA, 2000, Vol 66, Iss 1, pp 44-47*

A study evaluated the activity of an extract of stinging nettle roots (Urtica dioica) on the proliferative activity of human prostatic epithelial cancer. A significant antiproliferative effect of the extract was observed only on prostate cancer cells (growth reduction of 30%) during 7 days. There was no cytotoxic effect of extract on cell proliferation. The antiproliferative effect of stinging nettle roots clearly indicates a biologically relevant effect of compounds present in the extract.

2. **Effect of COQ10 on atherosclerosis**

Full source: *ATHEROSCLEROSIS, 2000, Vol 148, Iss 2, pp 275-282*

The effects of the administration of coenzyme Q10 (3 mg/kg per day) and placebo were compared over 24 weeks. Rabbits received a trans fatty acid (TFA)-rich diet for 36 weeks and oxidized rabbit chow with vitamin C for 4 weeks. Results showed that intervention with coenzyme Q10 was associated with a significant decline in thiobarbituric acid reactive substances (TBARS), malondialdehyde (marker of stress), and an increase in blood levels of vitamin E in the coenzyme Q group compared to placebo group. (TBARS are end products that are formed during the decomposition of lipid + peroxidation products). These changes were indicators of a decrease in oxidative damage. The size of the mass or plaque in the aortic and coronary arteries, coronary atherosclerosis index, aortic and coronary atherosclerosis scores were significantly lower in the coenzyme Q group than placebo group. The frequency of plaque in the aortic and coronary arteries, as well as frequencies of ulcers, blood clots or hemorrhage, and cracks and fissures, were also significantly lower in the coenzyme Q group, indicating a better quality of plaque compared to those in the control group. The cholesterol, triglycerides in the aorta

were significantly lower and vitamin E significantly higher in the coenzyme Q group in comparison to the placebo group indicating that coenzyme Q10 can have beneficial effect on the chemical composition of the plaque. Thus, antioxidant therapy with coenzyme Q10 may be used as an adjunct to lowering lipids, independent of lipid lowering drugs, for additional beneficial effects related to the chemical composition and quality of plaque.

3. **Vitamin C prevents atherogenic effects of passive smoking**

Full source: *FREE RADICAL BIOLOGY AND MEDICINE, 2000, Vol 28, Iss 3, pp 428-436*

During passive smoking, the body is attacked by an excess of free radicals causing oxidative stress. In non-smokers, even a short period of passive smoking breaks down blood antioxidant defenses and accelerates lipid peroxidation which leads to accumulation of their low-density lipoprotein (LDL) cholesterol in human macrophages(immune cells) in culture. A study examined whether the effects of secondhand smoke which cause plaque in the arteries to form could be prevented by vitamin C. Ten non-smokers were exposed to A) normal air or B) cigarette smoke during four days. During the last 2 days, a single dose of vitamin C (3 g) was given. Results showed that vitamin C prevented the smoke-induced decrease in blood antioxidant defense, the decrease in the resistance of LDL to oxidation, and the accelerated formation of blood thiobarbituric acid reactive substances (TBARS, stress marker), observed 1.5 hours after the beginning of passive smoking. Thus, vitamin C protected non-smokers against the harmful effects of free radicals during exposure to secondhand smoke.

4. **Mitochondria, oxidative stress and aging**

Full source: FREE RADICAL RESEARCH, 2000, Vol 32, Iss 3, pp 189-198

Mitochondria play a key role in cellular aging. They are major targets of free radical attack especially mitochondrial DNA (mtDNA). Mitochondrial deficits accumulate upon aging due to oxidative damage. Thus, oxidative lesions to mtDNA accumulate with age in human and rodent tissues. In addition, levels of oxidative damage to mtDNA are several times higher than those of nuclear DNA. Mitochondrial size increases with age, but mitochondrial membrane potential decreases with age in brain and liver. Treatment with certain antioxidants, such as sulphur-containing antioxidants, vitamins C and E or Ginkgo biloba extract, protects against the age-associated oxidative damage to mtDNA and oxidation of mitochondrial glutathione (antioxidant) . Ginkgo extract also prevents changes in mitochondrial structure and function associated with aging of the brain and liver. Thus, mitochondrial aging may be prevented by antioxidants. Taking certain antioxidants later in life is able to prevent the impairment in physiological performance, particularly muscle nerve co-ordination, that occurs upon aging.

5. **Iron and increased lipid peroxidation**

Full source: JOURNAL OF NUTRITION, 2000, Vol 130, Iss 3, pp 621-628

Both iron deficiency and daily iron supplements increase lipid peroxidation in rodents.Studies have shown that diets with high iron content increase markers of lipid peroxidation, but the effects of oral iron supplements on these markers has not been addressed. A study investigated the effects of daily and intermittent iron supplements on iron and vitamin E status, and lipid peroxidation. The conclusion was that iron deficiency results in lipid peroxidation, but that its correction with daily iron supplements results in abnormal iron accumulation and increased lipid peroxidation. These effects are made less severe by irregular instead of daily iron supplementation. Thus, overuse of iron supplementation should be avoided.

6. **Vitamin E reduces chromosomal damage and inhibits tumors**

Full source: *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, 2000, Vol 97, Iss 5, pp 2196-2201*

Chronic activation of the activity of mitogens (substances that induce cell division and transformation), induced by over-activity of cancer genes in mouse liver causes a state of oxidative stress (production of free radicals). A study proposed that increased free radical generation might be responsible for the extensive chromosomal damage and acceleration of liver

cancer development. It shows that vitamin E (VE), a potent free radical scavenging antioxidant, is able to protect liver tissue against oxidative and suppress tumor-creating potential of the cancer genes. Dietary supplementation with vitamin E, decreased free radical generation and coincidentally showed a significant inhibition of normal liver cell proliferation, while increasing the chromosome and DNA stability in the liver. Dietary vitamin E also reduced liver cell abnormality and increased their viability. Vitamin E treatment decreased benign tumors by 65% and prevented malignant conversion. This shows that free radicals generated by over-activity of cancer genes in the liver are the primary carcinogenic agents in mice. Dietary supplementation of vitamin E can effectively inhibit liver cancer development.

7. **Melatonin secretion in perimenopausal women**

Full source: JOURNAL OF PINEAL RESEARCH, 2000, Vol 28, Iss 2, pp 111-118

Age-related decrease in melatonin secretion in humans and animals is well documented. A study measured changes in nocturnal melatonin and looked at the role played by estrogen in controlling nocturnal melatonin secretion in 46 premenopausal women, 44 postmenopausal women, and 11 premenopausal women with a benign tumor of uterus scheduled for hysterectomy. Nighttime blood melatonin secretion in premenopausal women declined moderately from 17 to 45 years of age, and increased during the period from 46 to 50 years of age. Among postmenopausal women, a steep, age-related decline in nighttime melatonin secretion was found for up to 15 years postmenopause, followed by an extremely gradual decline thereafter. There was a significant negative association between the peak blood melatonin concentration and estrogen in the blood in premenopausal women aged 40-50 years. Daily oral administration of estrogen to postmenopausal women suppressed nighttime melatonin secretion. A low estrogen state, induced by removal of the ovaries of premenopausal women with uterine cancer led to an increase in nighttime melatonin secretion. The results suggest that temporary elevated nighttime melatonin secretion during menopause may be related to a low estrogen level.

8. **NAC and vitamin E modulate immune function**

Full source: IMMUNOLOGY AND CELL BIOLOGY, 2000, Vol 78, Iss 1, pp 49-54

Two studies were set up to confirm the hypothesis of the immunomodulating action of anti-oxidants (bringing back altered immune function to more optimum values). The first study is a pathological one. When mice were shocked with a chemical toxin, the lymphocytes (immune system cells) showed increased adherence and reduced movement. N-acetylcysteine (NAC), which increased both functions in control animals, decreased adherence and increased movement in mice with endotoxic shock. The second study is a physiological one. In men (avg age 70) lymphocyte adherence was increased and lymphocyte response to mitogens (substances that induce mitosis and cell transformation) compared with younger adults was decreased. Vitamin E (200 mg daily for 3 months) lowered adherence and stimulated proliferation (reproduction or multiplication of cells). Thus, anti-oxidants preserve adequate function of immune cells against the disturbances of stability, such as those caused by endotoxic shock and ageing.

9. **Fish oil vs. blood clotting**

Full source: *JOURNAL OF CARDIOVASCULAR PHARMACOLOGY, 2000, Vol 35, Iss 3, pp 502-505*

A study looked at the influence of dietary fish oil on blood clotting in the aorta (largest artery), platelet aggregation (stickiness), and superoxide dismutase (SOD) (antioxidant) activity. Rodents were fed regular chow supplemented with stable fish oil preparation (for 1 or 3 weeks). Rodents fed regular chow only served as controls. In control rats, a platelet-fibrin-rich blood clot formed in the aorta. However, dietary fish oil delayed the time of blood clot formation (24 minutes in rodents fed fish oil for 1 week and 31 minutes in rats fed fish oil for 3 weeks). It also inhibited platelet aggregation (21 % vs. 35%) and increased SOD activity. Thus, dietary supplementation with fish oil delays formation of blood clots in the arteries, by reducing platelet aggregation and oxidative stress-associated arterial injury.

10. **Garlic extract vs. free radical damage**

Full source: CELL BIOCHEMISTRY AND FUNCTION, 2000, Vol 18, Iss 1, pp 17-21

The effects of garlic and neem leaf extracts on lipid peroxidation and antioxidant status during administration of a carcinogen were evaluated in rodents. After administration of a carcinogen, there was greater lipid peroxidation in the stomach, liver and circulation. This was accompanied by a significant decrease in the endogenous antioxidant, glutathione (GSH) and other beneficial enzymes. The administration of garlic and neem leaf extracts significantly decreased the

formation of lipid peroxides and enhanced the levels of antioxidants and detoxifying enzymes in stomach, (the primary target organ for the carcinogen), as well as in the liver and circulation. Garlic and neem may exert their protective effects by modulating lipid peroxidation and enhancing the levels of glutathione and glutathione-dependent enzymes.

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