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IN THE  
NEWS**Green Tea Compound Reduces Breast Cancer Growth in Animals**

The green tea antioxidant epigallocatechin-3-gallate (EGCG) slows breast cancer growth in female mice, a new study reveals.\*

University of Mississippi researchers added EGCG to the drinking water of seven-week-old female mice for five weeks, while a control group received unenhanced drinking water. During the second week of the study, researchers injected both groups with breast cancer cells.

Mice treated with the EGCG showed a reduction in tumor size by 66% and tumor weight by 68% compared with the control group. The green tea antioxidant also lowered the density of small blood vessels within tumors and levels of a protein called vascular endothelial growth factor found in a variety of breast cancer types. The researchers suggested that EGCG directly targets tumor blood vessels and cells to suppress new blood vessel formation and the proliferation and migration of breast cancer cells.

“We believe our findings will help lead to new therapies for the prevention and treatment of breast cancer in women,” they concluded.

—Dayna Dye



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**Reference**

\* Available at: <http://www.the-aps.org/press/journal/08/8.htm>. Accessed May 8, 2008.

**Daily Aspirin Reduces Hormone-Sensitive Breast Cancer Risk**

New research backs the idea that aspirin protects against estrogen receptor-positive breast cancer,<sup>1</sup> a hormone-sensitive malignancy that makes up 75% of all cases of the disease.

In this large-scale, long-term study, researchers from the National Cancer Institute evaluated questionnaire-based data on diet, demographics, and medication usage from over 127,000 women who were cancer-free at the start of the study. After seven-year follow-up, using cancer registry information, the researchers found that women who reported daily aspirin use had a 16% lower risk of estrogen-receptor positive breast cancer than women who did not use the drug.

The researchers also evaluated other types of non-aspirin anti-inflammatory drugs, which were found to have no significant association with breast cancer risk. Aspirin is a non-steroidal anti-inflammatory drug (NSAID), but unlike other drugs in this class, it irreversibly inhibits an enzyme called cyclooxygenase-2 (COX-2), which may interrupt the carcinogenic process by a number of pathways, including suppression of estrogen synthesis.

This study also supports other findings that aspirin reduces the risk of hormone-sensitive breast cancer.<sup>2,3</sup>

—Dayna Dye

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**Reference**

1. Gierach GL, Lacey JV Jr, Schatzkin A, et al. Nonsteroidal anti-inflammatory drugs and breast cancer risk in the National Institutes of Health-AARP Diet

and Health Study. *Breast Cancer Res.* 2008 Apr 30;10(2):R38.

2. Terry MB, Gammon MD, Zhang F, et al. Association of frequency and duration of aspirin use and hormone receptor status with breast cancer risk. *JAMA.* 2004 May 26;291(20):2433-40.

3. Agrawal A, Fentiman IS. NSAIDs and breast cancer: a possible prevention and treatment strategy. *Int J Clin Pract.* 2008 Mar;62(3):444-9

## Coenzyme Q10 Relieves Muscle Damage in Athletes

Coenzyme Q10 (CoQ10) supplementation significantly reduces muscle injury and oxidative stress due to intensive exercise, a new study reveals.<sup>1</sup>

In this double-blind study, 18 elite athletes took 300 mg/day of CoQ10 or placebo for 20 days, during which time they exercised intensively for 5.5 hours daily for six days. Various blood markers of muscle wear and tear and oxidative stress were measured before, during, and after the study period.<sup>1</sup>

Myoglobin and creatine kinase, proteins that indicate muscle damage, increased in both groups, but the increase was significantly less in the CoQ10 group. Levels of lipid peroxide, a measure of oxidative stress, were also lower among subjects taking CoQ10 than among control subjects.<sup>1</sup>

These results complement recent findings that CoQ10 supplementation may reduce exercise-induced fatigue and improve physical performance.<sup>2,3</sup>

—Dale Kiefer

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### Reference

1. Kon M, Tanabe K, Akimoto T, et al. Reducing exercise-induced muscular injury in kendo athletes with supplementation of coenzyme Q10. *Br J Nutr.* 2008 Feb 20;:1-7 [Epub ahead of print].

2. Cooke M, Iosia M, Buford T, et al. Effects of acute and 14-day coenzyme Q10 supplementation on exercise performance in both trained and untrained individuals. *J Int Soc Sports Nutr.* 2008 Mar 4;5:8.

3. Mizuno K, Tanaka M, Nozaki S, et al. Antifatigue effects of coenzyme Q10 during physical fatigue. *Nutrition.* 2008 Apr;24(4):293-9.

## Anthocyanins Show Promise for Obesity

Anthocyanins, the colorful antioxidant pigments contained in many fruits and vegetables, help regulate adipocyte function and obesity in mice, according to a recent study.\* Adipocyte (fat cell) dysfunction promotes obesity, which in turn is a major risk factor for metabolic syndrome and insulin resistance.

Four groups of mice (six each) were fed a control diet, control + anthocyanins, high-fat diet, or high-fat + anthocyanins. At 12 weeks, mice in the high-fat group weighed significantly more than all three other groups, suggesting that the anthocyanins prevented weight gain in the high-fat + anthocyanins group. Hypertrophy (size increase) of adipocytes occurred in the high-fat group, but not the high-fat + anthocyanins group. In a DNA analysis of human adipocytes, incubation with anthocyanins down-regulated the expression of inflammatory cytokines. The anthocyanins used in this study were derived from purple corn; berries are another rich source of anthocyanins.



According to the author, dietary anthocyanins have “a significant potency for anti-obesity.”

—Laura J. Ninger, ELS

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### Reference

\* Tsuda T. Regulation of adipocyte function by anthocyanins; possibility of preventing the metabolic syndrome. *J Agric Food Chem.* 2008 Feb 13;56(3):642-6.

## Whey Protein Supplement Effective for Weight Loss

A purified whey protein supplement achieves substantial weight loss while sparing lean muscle, a recent study reports.\* The supplement contains high levels of leucine from whey protein, bioactive peptides, and calcium.

More than 100 overweight adults (body mass index of 30-42 kg/m<sup>2</sup>) were randomly assigned to a low-calorie diet plus the whey supplement twice daily before meals or the same diet plus a control beverage of equal calories. After 12 weeks, the supplement group lost more weight than controls, and significantly more of the loss was in body fat (6.2 lb versus 3.6 lb). Supplement users were also less likely to lose lean muscle.

Total body fat loss in the supplement group was 6%, leading the authors to conclude that “because a 5% reduction of body fat mass has been shown to reduce the risk of obesity-related disease, the results have practical significance.”

—Laura J. Ninger, ELS



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## Reference

\* Frestedt JL, Zenk JL, Kuskowski MA, Ward LS, Bastian ED. A whey-protein supplement increases fat loss and spares lean muscle in obese subjects: a randomized human clinical study. *Nutr Metab (Lond)*. 2008 Mar 27;5:8.

## Fathers-To-Be Need Folate Too

Ensuring optimal folate intake during the reproductive years is just as important for men as it is for women, according to a new report.\* Men who have reduced levels of this B vitamin have a higher rate of chromosomal abnormalities in their sperm, which puts their children at greater risk for genetically determined disorders.

Scientists administered dietary questionnaires to 97 healthy men aged 22 to 80 to determine their intake of folate and other nutrients from food and supplements. Semen samples were then collected and examined for aneuploidy (abnormal numbers of chromosomes), which can lead to genetically determined learning difficulties or Down’s syndrome. Men who consumed the highest amount of folate (722-1,150 mcg) had a 20% lower risk of abnormal sperm, compared with men whose folate intake was low.

If future research confirms these findings, men intending to become fathers may be wise to increase their folate intake for at least three months before attempting to conceive in order to minimize the risk of genetic disorders in their children.

—Dayna Dye

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## Reference

\* Young SS, Eskenazi B, Marchetti FM, Block G, Wyrobek AJ. The association of folate, zinc and antioxidant intake with sperm aneuploidy in healthy non-smoking men. *Hum Reprod*. 2008 May;23(5):1014-22.

## Vitamin D May Protect Against Peripheral Artery Disease

Low serum vitamin D levels are associated with an increased risk of peripheral artery disease, according to a recent report from the National Health and Nutrition Examination Survey (NHANES).<sup>1</sup> Peripheral artery disease occurs when arteries in the legs are damaged by atherosclerotic plaque, which diminishes blood flow and can cause leg pain and slow-healing foot wounds.

Researchers divided 4,839 participants into four groups based on their blood levels of vitamin D. They found increasing levels of the vitamin to be associated with a lower prevalence of peripheral artery disease. Participants with the lowest vitamin D blood levels (<17.8 ng/mL) had an 8.1% prevalence of the disease while those with the highest levels (>29.2 ng/mL) had only a 3.7% prevalence. Adjusted analysis of the data showed that peripheral artery disease was 80% more common in individuals with the lowest vitamin D levels, compared with those who had the highest levels.

This study adds to growing evidence of vitamin D’s cardioprotective activity,<sup>2,3</sup> leading the study authors to note that further

studies investigating the nutrient's mechanism of action are needed.

—Michael J. Hall, ND

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1. Melamed ML, Munter P, Michos ED, et al. Serum 25-hydroxyvitamin D levels and the prevalence of peripheral arterial disease. Results from the NHANES 2001 to 2004. *Arterioscler Thromb Vasc Biol.* 2008 April 16 [Epub ahead of print].
2. Wang TJ, Pencina MJ, Booth SL, et al. Vitamin D deficiency and risk of cardiovascular disease. *Circulation.* 2008 Jan 7 [Epub ahead of print].
3. Lind L, Hanni A, Lithell H, Hvarfner A, Sorensen OH, Ljunghall S. Vitamin D is related to blood pressure and other cardiovascular risk factors in middle-aged men. *Am J Hypertens.* 1995 Sept;8(9):894-901

## **Green Tea Combats Exercise-Induced Oxidative Damage**

Consuming green tea protects against exercise-induced oxidative damage, according to a new study.\* Oxidative damage, which results from metabolic activity and is increased following exercise, is linked to degenerative changes associated with aging and chronic disease.

Fourteen study volunteers participated. One group consumed green tea three times daily for seven days, while a control group did not drink green tea. Researchers then had the subjects perform a strenuous bench-press exercise and measured various blood markers for signs of oxidative stress before and after the activity.

The group who consumed green tea had significantly lower levels of blood markers that indicate oxidative tissue damage both before and after exercising. This group also had significantly higher post-exercise blood levels of glutathione, which is a key antioxidant, and greater blood antioxidant potential.

Green tea, a beverage rich in polyphenols, may thus offer protection against the oxidative damage incurred by athletes and everyone who exercises.

—Michael J. Hall, ND

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#### Reference

- \* Panza VS, Wazlawik E, Ricardo Schütz G, Comin L, Hecht KC, da Silva EL. Consumption of green tea favorably affects oxidative stress markers in weight-trained men. *Nutrition.* 2008 May;24(5):433-42.

## Low Vitamin D Levels Linked With Depression

A new study shows for the first time that older people with low levels of vitamin D and elevated levels of parathyroid hormone (PTH, a hormone that regulates blood calcium levels) are more likely to be depressed than those with normal levels.\*

In this study, Dutch researchers measured levels of 25-hydroxyvitamin D and PTH in 1,282 participants aged 65 to 95, of whom 26 were suffering from major depression and 169 from minor depression.

They found 25-hydroxyvitamin D levels to be 14% lower in depressed subjects (average: 19 ng/mL) than non-depressed subjects (average: 22 ng/mL). In both depressed and non-depressed participants, vitamin D was far below optimal ranges of 50-60 ng/mL of 25-hydroxyvitamin D of blood, indicative of how pervasive vitamin D deficiencies have become. Serum PTH levels were 33% higher in those with major depression compared with their non-depressed counterparts. Higher PTH can be caused by inadequate vitamin D status.

—Dayna Dye

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### Reference

\* Hoogendijk WJ, Lips P, Dik MG, Deeg DJ, Beekman AT, Penninx BW. Depression is associated with decreased 25-hydroxyvitamin D and increased parathyroid hormone levels in older adults. *Arch Gen Psychiatry*. 2008 May;65(5):508-12.

## Common Class of Drugs Accelerates Mental, Physical Decline in Elderly

Anticholinergic medications, which are commonly used for conditions like overactive bladder, motion sickness, and asthma, may hasten functional and cognitive decline in older adults, according to new research.<sup>1-3</sup> Anticholinergics selectively block receptors for acetylcholine, a neurotransmitter involved in motor function and memory.

A study presented at the American Academy of Neurology showed that healthy older adults using anticholinergic medication experienced a 1.5 times faster rate of cognitive decline than subjects not using the medications. Medications used to treat bladder disorders were the most problematic.<sup>1</sup>

A related presentation from the American Geriatric Society reported that older adults using anticholinergics demonstrated slower walking speed and were more likely to need help with activities of daily living compared with people who did not take the drugs. Taking one moderately anticholinergic drug simulated an extra three to four years of age.<sup>2</sup>

These findings dovetail with a recent study showing that older adults who used medications for dementia and overactive bladder had a 50% faster rate of functional decline compared with adults who only used medication for dementia.<sup>3</sup>

While anticholinergics can be useful medicines, physicians and patients should be aware that they can accelerate physical and cognitive decline.

—Dale Kiefer

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2. Available at: <http://www.reuters.com/article/sphereNews/idUSN0230858220080503?sp=true&view=sphere>. Accessed May 9, 2008.

3. Sink KM, Thomas J 3rd, Xu H, Craig B, Kritchevsky S, Sands LP. Dual use of bladder anticholinergics and cholinesterase inhibitors: long-term functional and cognitive outcomes. *J Am Geriatr Soc*. 2008 May;56(5):847-53

## Olive Oil Substance is Excellent Fish Oil Preservative, Antioxidant

Adding the olive oil polyphenol hydroxytyrosol to fish oil and fish oil-rich food products preserves freshness and dramatically improves their shelf life, according to a new study published in the *Journal of Agricultural and Food Chemistry*.<sup>1</sup>

While fish oil has long been valued for its healthful benefits, protecting its delicate fats against oxidation has posed a technical challenge for nutritional scientists. Manufacturers routinely add the artificial preservative, propyl gallate to prevent unwanted oxidation of omega-3 fatty acids and/or vitamin E.

Spanish investigators conducted experiments on several fish products and determined that natural olive oil-derived hydroxytyrosol was as effective as the synthetic preservative in preserving the integrity of omega-3 fatty acids and vitamin E.<sup>1</sup>

For years, Life Extension has included olive oil polyphenols in its Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract formulation, based on the excellent antioxidant and lipid-lowering profile of these unique phytochemicals.<sup>2</sup> These recent findings confirm that olive oil polyphenols enhance the benefits of fish oil.

—Dale Kiefer

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### Reference

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2. Jemai H, Fki I, Bouaziz M, et al. Lipid-lowering and antioxidant effects of hydroxytyrosol and its triacetylated derivative recovered from olive tree leaves in cholesterol-fed rats. *J Agric Food Chem*. 2008 Apr 23;56(8):2630-6.

## Weight Loss Critical in Diabetes Management

Overweight patients with type 2 diabetes should lose weight, rather than take ever-increasing doses of insulin, according to diabetes researcher, Roger H. Unger, MD.

In a commentary that appeared recently in the *Journal of the American Medical Association*,<sup>1</sup> Dr. Unger noted that the current paradigm regarding type 2 diabetes focuses on patients' high blood sugar levels, and involves treatments designed to reduce blood sugar, often through intensive insulin therapy. But insulin resistance and the failure of pancreatic beta cells to produce adequate insulin are the result of lipotoxicity, or fatty acid poisoning, according to a new view of the disease.<sup>2</sup>

Fat cells release substances that contribute to insulin resistance, including adiponectin, resistin, tumor necrosis factor-alpha, and interleukin-6.<sup>3</sup> The logical remedy is to reduce or remove the problem—excess body fat—rather than escalate insulin doses. High levels of insulin only contribute to the problem, says Dr. Unger, by shifting excess glucose to fatty acid production, thus increasing the fatty acids that cause diabetes in the first place.

—Dale Kiefer

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### Reference

1. Unger RH. Reinventing type 2 diabetes: pathogenesis, treatment, and prevention. *JAMA*. 2008 Mar 12;299(10):1185-7.
2. Carpentier AC. Postprandial fatty acid metabolism in the development of lipotoxicity and type 2 diabetes. *Diabetes Metab*. 2008 Apr;34(2):97-107.
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## Fish Oil Improves Infants' Cognitive and Motor Function

Infants exposed to a high level of docosahexaenoic acid (DHA) prenatally have improved mental and motor development, according to a study of native Inuit in Arctic Quebec.\* DHA is an omega-3 polyunsaturated fatty acid found abundantly in fatty fish that is a staple of the Inuit diet.

The level of DHA was measured in umbilical cord blood of 109 Inuit infants and compared with growth and development at 6 and 11 months. A higher DHA level obtained prenatally from the mother was associated with longer gestation, better vision at six months, and better mental and psychomotor development at 11 months. Postnatal DHA intake from breast-feeding was not significantly associated with any outcome variables.

Umbilical cord DHA concentrations correlated highly with maternal concentrations, indicating that the fetus depends on the mother's polyunsaturated fatty acid intake. Omega-3 fatty acids play a role in third-trimester brain and visual development and are critical in the maternal diet.

—Laura J. Ninger, ELS



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## Reference

\* Jacobson JL, Jacobson SW, Muckle G, Kaplan-Estrin M, Ayotte P, Dewailly E. Beneficial effects of a polyunsaturated fatty acid on infant development: evidence from the Inuit of Arctic Quebec. *J Pediatr.* 2008 Mar;152(3):356-64.

## Nuts Reduce Cholesterol via Monounsaturated Fatty Acids

Adults who consume a short-term macadamia nut-enriched diet have significantly lower cholesterol levels than those who consume a control diet.\* Macadamia nuts contain low levels of saturated fats and high levels of monounsaturated fatty acids.

In this five-week study, 25 men and women with slightly elevated cholesterol were randomly assigned to the macadamia diet (1.5 ounces/day) or an average American diet. Total fat in the diets was the same; only the percentages of saturated and monounsaturated fats differed. At five weeks, the macadamia diet was associated with a 9% reduction in both serum total cholesterol and low-density lipoprotein (LDL) compared with controls. Other cholesterol measures, such as the ratio of LDL to beneficial high-density lipoprotein (HDL), also improved significantly after the macadamia diet.



Research studies show that nuts are beneficial to reduce levels of LDL and prevent cardiovascular disease. This study indicates that macadamia nuts are a good substitute for saturated fats in the diet.

—Laura J. Ninger, ELS

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## Reference

\* Griel AE, Cao Y, Bagshaw DD, Cifelli AM, Holub B, Kris-Etherton PM. A macadamia nut-rich diet reduces total and LDL-cholesterol in mildly hypercholesterolemic men and women. *J Nutr.* 2008 Apr;138(4):761-7.

## DHEA Inhibits Endothelial Inflammation

Scientists have shown that dehydroepiandrosterone-sulfate (DHEA-S) inhibits inflammation in human endothelial cells.\* Inflammation and endothelial dysfunction are intimately connected with atherosclerosis, the root cause of cardiovascular disease.

Investigators hypothesized that DHEA-S reduces inflammation in the vascular endothelium (cells lining blood vessels). They incubated endothelial cells from human aortas with DHEA-S for 48 hours and then exposed the cells to tumor necrosis factor-alpha (TNF-alpha), a known instigator of inflammation. DHEA-S significantly inhibited the subsequent production of inflammatory proteins ordinarily triggered by TNF-alpha.

The results demonstrated the ability of DHEA-S to “directly inhibit the inflammatory process,” and showed “a potential direct effect of DHEA-S on vascular inflammation that has implications for the development of atherosclerotic cardiovascular disease,” investigators concluded.

—Dale Kiefer



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## Reference

\* Altman R, Motton DD, Kora RS, Rutledge JC. Inhibition of vascular inflammation by dehydroepiandrosterone sulfate in human aortic endothelial cells: Roles of PPARalpha and NF-kappaB. *Vascul Pharmacol*. 2008 Feb-Mar;48(2-3):76-84.

## Vitamin K2 May Protect Against Prostate Cancer

A new European study published in the *American Journal of Clinical Nutrition* suggests that men with the highest intakes of vitamin K2 have the lowest risk of prostate cancer.\*

Intakes of vitamins K1 and K2 were statistically compared with the incidence of total and advanced prostate cancer cases in more than 11,000 men participating in the ongoing European Prospective Investigation into Cancer and Nutrition trial. Investigators compared estimated dietary intakes of vitamin K1 and vitamin K2 with the incidence of total and advanced prostate cancer. Subjects were followed for an average of 8.6 years.

Men who consumed the highest levels of vitamin K2 (but not vitamin K1) demonstrated a modestly lower incidence of prostate cancer. Higher vitamin K2 intake was particularly protective against advanced prostate cancer.

“Further studies of dietary vitamin K and prostate cancer are warranted,” the authors concluded.

—Dale Kiefer

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## Reference

\* Nimptsch K, Rohrmann S, Linseisen J. Dietary intake of vitamin K and risk of prostate cancer in the Heidelberg cohort of the European Prospective Investigation into Cancer and Nutrition (EPIC-Heidelberg). *Am J Clin Nutr*. 2008 Apr;87(4):985-92.

## US Congress Seeks to Reverse FDA’s Blockade on Estriol

The US Congress is taking a key step in attempting to overturn the FDA's action to halt the sale of estriol. The FDA recently sent out a series of warning letters to compounding pharmacies across the country demanding they stop using estriol and the term bio-identical in their hormone-replacement formulas. The attack by the FDA followed a citizen's petition filed by the pharmaceuticals giant, Wyeth, which has effectively denied hundreds of thousands of women access to many natural bio-identical hormones that doctors have prescribed for them, forcing them to use standard pharmaceuticals instead. In announcing its decision, the FDA admitted that this action was not over any adverse event or health issue associated with estriol. Instead, it appears to be directly related to Wyeth's request to eliminate competition for its own hormone-replacement therapies.



Resolution 342 is being backed by notable members of the Congress and is calling on the FDA to lift the restriction on prescriptions containing estriol and protect Americans' access to compounded bio-identical hormone therapies. Up to 80% or more of these custom-made treatments for women contain estriol, which is chemically identical to the naturally occurring hormone produced by women, especially during the third trimester of pregnancy, and which has been used successfully and without problems for decades.

There are significant differences between Wyeth's hormone drug Premarin® (conjugated estrogen) and bio-identical hormones. Premarin® is derived from pregnant horse urine, while estriol is chemically identical to what the human body produces. Premarin® has been shown to increase the risks of cancer and vascular disease,<sup>1,2</sup> which have resulted in Wyeth being ordered to pay multimillion dollar court settlements following guilty verdicts that the company concealed a material fact about the safety of the product. Wyeth is also fighting over 5,000 similar lawsuits of fraud across the country.

Estriol, on the other hand, is a natural ingredient that cannot be patented and is therefore unavailable for exploitation by a drug company. In essence, Wyeth is seeking to use the FDA to eliminate healthy market competition as more women choose estriol in its bio-identical form.

A number of studies have shown that estriol is effective in relieving menopausal symptoms such as hot flashes, diminished libido, vaginal dryness, irritability, depressed mood, and bone loss.<sup>3-6</sup> Estriol provides many of the benefits of pharmaceutical hormone drugs but without the harsh side effects.<sup>7</sup>

The FDA's action is essentially implying that the side effects of Premarin® apply to bio-identical hormone therapies, but the studies that showed increased risks only examined Wyeth's products and not these natural therapies. The support of the US Congress on this issue is welcome news indeed, given the FDA's own recent admissions that it is incapable of keeping up with advances in science<sup>8</sup> that could save millions of lives.

You can support women's right to choose their own treatment and the rights of practitioners to practice medicine by emailing your Congressional Representative to support Resolution 342 on estriol by logging onto <http://www.lef.org/lac/>.

—Bina Singh

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## Reference

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3. Tzingounis VA, Aksu MF, Greenblatt RB. Estriol in the management of the menopause. *JAMA*. 1978 Apr 21;239(16):1638-41.
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