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**Essential nutrient found in eggs reduces risk of breast cancer by 24 percent**

*Most women in the US consume too little choline*

**Park Ridge, Ill. (April 3, 2008)** Choline, an essential nutrient found in foods such as eggs, is associated with a 24 percent reduced risk of breast cancer, according to a study supported by a grant from the U.S. National Institutes of Health (NIH), to be published in The FASEB Journal's print issue in June.(1) This study adds to the growing body of evidence that links egg consumption to a decreased risk of breast cancer.

In this new case-control study of more than 3,000 adult women, the risk of developing breast cancer was 24 percent lower among women with the highest intake of choline compared to women with the lowest intake. Women with the highest intake of choline consumed a daily average of 455 mg of choline or more, getting most of it from coffee, eggs and skim milk. Women with the lowest intake consumed a daily average of 196 milligrams or less.

"Choline is needed for the normal functioning of cells, no matter your age or gender," says Steven H. Zeisel, MD, PhD, University of North Carolina, who is an author of the study and a leading choline researcher. "Increasing evidence shows that it may be particularly important for women, particularly those of child-bearing age."

Only ten percent of Americans currently meet the recommended intake for choline, identifying a need to increase choline intake across the population.(2) According to the Institute of Medicine, adequate choline intake is 550 milligrams per day for men and breastfeeding women, 425 milligrams per day for women, and 450 milligrams per day for pregnant women.(3) One egg contains 125.5 milligrams of choline, or roughly a quarter the recommended daily supply, making eggs an excellent source of this essential nutrient.(4) Choline is found exclusively in the egg's yolk. Other top food sources of choline include liver, wheat germ and cauliflower.

"While choline is an essential nutrient to the human diet, most people haven't even heard of it," says Gerald Weissmann, MD, Editor in Chief of The FASEB Journal and research professor of medicine and director of the Biotechnology Study Center at the New York University School of Medicine. "Given that in the U.S. there is a real need to understand how much choline we require in our diet, we hope that research, education and awareness about choline will increase as a result of this study published in The FASEB Journal."

**Eggs and Decreased Risk of Breast Cancer:**

Two previously published studies, supported by NIH grants, have shown that women who eat eggs have a lower risk of developing breast cancer:

- A study published in 2003 by researchers at Harvard University found that women who reported higher consumption of eggs, vegetable fat and fiber during adolescence had a smaller risk of

developing breast cancer as adults. Specifically, eating one egg per day was associated with an 18 percent reduced risk of breast cancer.(5)

- A study of Chinese women published in Cancer Epidemiology, Biomarkers & Prevention in 2005 showed that those who consumed the most fruit, vegetables and eggs were significantly less likely to have breast cancer. For those that reported eating at least six eggs per week, the risk of developing breast cancer was 44 percent lower than for those who ate two or less eggs per week.(6)

#### **Other Benefits of Choline:**

In addition to playing a role in the normal functioning of all cells, including brain and nerve function, liver metabolism and the transportation of nutrients throughout the body, choline has been shown to:

- Prevent Birth Defects: According to population-based research, infants from mothers whose diets were deficient in choline were four times more likely to have neural tube defects such as spina bifida. This increased risk was observed even when other nutrients that help prevent birth defects, such as folic acid, were in adequate supply.(7)
- Improve Memory: Research suggests that choline is essential for proper fetal and infant brain development. It appears that choline affects the areas of the brain responsible for memory function and life-long learning ability.(8)
- Reduce Heart Disease Risk: Choline, like folate, is involved in breaking down homocysteine, an amino acid in the blood that may be associated with an increased risk of heart disease. In fact, research shows that choline deficiency results in increased homocysteine levels.(9) This may help to explain why 30 years of research have shown that healthy adults can consume eggs without increasing their risk of heart disease.(10)

#### **For More Information:**

- To receive an educational brochure on choline and for more information on the benefits of eggs, visit the Egg Nutrition Center at [www.enc-online.org](http://www.enc-online.org)
- Join the discussion on eggs and nutrition science on Dr. Donald J. McNamara's blog, [www.UnscramblingTheScience.com](http://www.UnscramblingTheScience.com)
- For choline-rich egg recipes and preparation tips, visit the American Egg Board at [www.incredibleegg.org](http://www.incredibleegg.org)

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#### **About the Egg Nutrition Center (ENC)**

ENC is dedicated to providing accurate information on eggs, nutrition, and health, and sponsors scientific research on this topic. Research grants are openly solicited and reviewed by a Scientific Advisory Panel of authorities in health research and clinical practice. Independent scientists guide many of the research projects and provide analysis and interpretation of scientific literature. The ENC is funded by the American Egg Board, which uses funds from egg farmers for promotion and research. The U.S. Department of Agriculture provides oversight of its activities. ENC is located in Park Ridge, Ill. Visit [www.EggNutritionCenter.org](http://www.EggNutritionCenter.org) for more information.

#### **About the American Egg Board (AEB)**

AEB connects America's egg farmers with consumers, communicates the value of the incredible edible egg™ and receives funding from a national legislative checkoff on all egg production from companies with more than 75,000 hens in the continental United States. The board consists of 18 members and 18

alternates from all regions of the country who are appointed by the Secretary of Agriculture. The AEB staff carries out the programs under the board's direction. AEB is located in Park Ridge, Ill. Visit [www.IncredibleEgg.org](http://www.IncredibleEgg.org) for more information.

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