

# Forks Over Knives – A Critical Review

While watching the movie “Forks Over Knives” we were pleased with the emphasis they placed on eating whole plant foods over processed options full of sugar and fat. However there were some statements made in the film that were incorrect. The research group at WeBeFit has put together this document to set the record straight.

**The first issue was a minor one. In the movie the narrator said, “Dietary cholesterol...which is ONLY found in animal foods like meat, eggs and dairy products...”**

## **FALSE**

When making broad based statements, it’s important to stick to the facts. The reality is that plants DO contain cholesterol, both free and esterified. It’s often a component of plant membranes and as part of the surface lipids of leaves where it is sometimes the major sterol.

**TECHNICAL DETAILS:** It’s important to note that cholesterol is typically much lower in plants, averaging 50 mg/kg total lipid while in animals it can be 5 g/kg or higher.

The reason this is important is because diets are often designed to limit consumption of cholesterol and they should be based on the truth and not incorrect statements. Keep in mind if you’re reading a nutrition label in the United States, cholesterol under 2 mg per serving can be shown as zero.

**The second issue was how the filmmakers linked drinking milk with osteoporosis. They showed a graph that lined up countries with the highest consumption of milk having the highest rates of osteoporosis and made the assumption that the milk (or something in it) caused the problem.**

## **FALSE**

When I say calcium, do you think of milk? It's an association that years of advertising has driven into our heads. We're taught that we need to get

enough calcium to build strong bones. If we don't, we're at risk of developing osteoporosis.

*(Dictionary.com defines osteoporosis as, "a disorder in which the bones become increasingly porous, brittle, and subject to fracture...")*

Evidence now suggests that may not be entirely correct. In a 12-year study of 77,761 women who had never used calcium supplements, they found that there were no differences in bone fractures between the women who drank two or more glasses of milk a day versus women who consumed one or fewer glasses a week. In fact, women didn't see any bone strengthening benefit from higher consumption of ANY food sources of calcium.

The first time I read the results, I was astonished. How could drinking more milk NOT help with bone health?

*Milk, dietary calcium, and bone fractures in women: a 12-year prospective study. By: D Feskanich, W C Willett, M J Stampfer and G A Colditz; Channing Laboratory, Boston, Mass. 02115, USA.*

After digging deeper into the studies, the problem didn't appear to be milk, but rather protein. It turns out, for each gram of protein you eat, you lose 1.75 milligrams of calcium. Societies with the highest consumption of protein in their diet also have the highest rates of osteoporosis. All the protein we're eating in America must be causing the problem! So I decided to check the math.

A single cup of milk has 8 grams of protein.

(Take out your calculators and multiply  $8 \times 1.75$ .)

That means drinking it would cause a person to lose 14 milligrams of calcium. However, that same cup of milk holds 300 milligrams of calcium.

(300 Milligrams of calcium, minus the 14 milligrams you lose from the protein, still leaves 286 grams of calcium!)

The amount of protein consumption, even if a person eats 170 grams of protein daily, doesn't reach high enough levels to cause serious calcium loss. Drinking one cup of milk a day would completely replenish it.

**So if excess protein isn't causing the problem, what is? Most research now points to a lack of exercise. The more "advanced" a society becomes; the less physical work individuals have to engage in.**

Studies now show that the most important thing you can do for bone health is, exercises that require "...*high forces and/or generate high impacts...*" That means unloaded exercises like swimming aren't going to help. But, "*Exercise involving high impacts, even a relatively small amount, appears to be the most efficient for enhancing bone mass...*" **The problem isn't too much protein or too little calcium; it's too little exercise. Specifically exercise that stresses the bones or "weight bearing" exercises like weight or resistance training.**

You can still drink milk. Not because of the calcium, but all the other things it provides that are good for you. Milk is a good source of phosphorus, magnesium, vitamin D and potassium; all elements associated with good bone health. But if you really want to avoid osteoporosis, weight-bearing exercises are the way to go.

*Exercise and bone mass in adults. By: Guadalupe-Grau A, Fuentes T, Guerra B, Calbet JA; Department of Physical Education, University of Las Palmas de Gran Canaria, Las Palmas de Gran Canaria, Canary Islands, Spain.*

*Exercise interventions to reduce fall-related fractures and their risk factors in individuals with low bone density: a systematic review of randomized controlled trials. By: de Kam D, Smulders E, Weerdesteyn V, Smits-Engelsman BC; Department of Rehabilitation, Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands.*

If you're looking for alternate sources of calcium, there are plenty of places to get it. You'll find calcium in baked beans, many breakfast cereals, bok choy, broccoli, collard greens and tofu made with calcium sulfate. You don't have to drink milk, it's just convenient.

**The third thing we had an issue with was a statement that linked milk consumption to cancer.**

**UNDETERMINED**

One of the strong anti-cow's milk arguments is that, *"Increased dietary protein, including from milk, can elevate serum concentrations of insulin-like growth factor 1, which has an unknown relation to cancer."* There was also concern that milk can increase prostate cancer by reducing a potent anti-prostate cancer hormone.

When clinical results of studies on humans came in, both concerns were dismissed. *"Overall, evidence suggests that being a lacto-vegetarian has greater health benefits and reduced health risks than being a vegan."*

In fact, 2002 data from the Nurses' Health Study showed that the more low-fat dairy products premenopausal women consumed, the LOWER their breast cancer risk.

That doesn't mean there haven't been any studies linking milk to cancer. There have, but unfortunately not in a clear-cut way.

*In the December, 2006 issue of his newsletter<sup>1</sup>, Loren Cordain, PhD, Professor of Health and Exercise Science at Colorado State University and author of The Paleo Diet, added a new item to his list of the many dangers of consuming dairy: betacellulin. Betacellulin is a growth factor found in the whey fraction of milk that appears to play important roles in the growth and differentiation of tissues in the fetus and newborn.*

*The dark side of this essential molecule, according to Cordain, is that it passes into the adult digestive tract intact, where it is taken up by receptors and can then enter circulation and stimulate the growth of cancer cells throughout the body. In support of this theory, he cites 25 studies purportedly linking increased rates of cancer to milk consumption.*

*Milk, however, contains a wide array of vitamins, minerals, fatty acids and proteins, many of which have anti-carcinogenic activity. As with any other food, the effect of milk on cancer is determined not by any single molecule within it, but by the concerted effect of all its chemical components acting together. The big question, then, is not whether isolated betacellulin can*

*stimulate the growth of cultured tumor cells, but whether milk, particularly whole, raw milk from grass-fed cows consumed in traditional forms, is likely to accelerate the growth of cancer in the people who drink it, or instead to nourish them and protect them against cancer. The epidemiological evidence by and large fails to make a strong case against even commercial milk, especially commercial whole milk. The small amount of existing research on pasture-fed milk suggests that it may, in fact, provide a powerful antidote to a wide variety of cancers.*

*-Chris Masterjohn – 30 April, 2007*

*Dunbar AJ, Priebe IK, Belford DA, Goddard C. Identification of betacellulin as a major peptide growth factor in milk: purification, characterization and molecular cloning of bovine betacellulin. Biochem J. 1999; 344 (Pt 3): 713-21.*

*Bastian SE, Dunbar AJ, Priebe IK, Owens PC, Goddard C. Measurement of betacellulin levels in bovine serum, colostrum and milk. J Endocrinol. 2001 Jan; 168(1): 203-12.*

Some research has centered around the hormones (estrogens) that are in milk from U.S. cows. Dairy farmers now milk their cows about 300 days per year. For much of that time the cows are pregnant, and as pregnancy progresses, the estrogen content of their milk increases.

If you're concerned about hormones, go for skim milk. In the United States, skim milk (as opposed to whole or two percent milk) has the lowest levels of hormones because hormones are fat soluble. Organic fat-free milk is even lower still.

And that anti-prostate cancer hormone? Local production of that hormone is independent of diet, so milk can't suppress it.

Drinking cow's milk won't give you cancer, but it won't do much for your bones either. Yes, it's a good source of calcium and protein, so it's a perfectly reasonable thing to drink. Just don't expect miracles if you do. Like any food or drink you should take it in moderation, as part of a balanced diet.

*Should dairy be recommended as part of a healthy vegetarian diet?  
By: Weaver CM.; Department of Foods and Nutrition, Purdue  
University, West Lafayette, IN, USA.*

### **Regarding cancer and diet:**

*The European Prospective Investigation into Cancer and Nutrition (EPIC) is coordinated by Dr Elio Riboli, Head of the Division of Epidemiology, Public Health and Primary Care at the Imperial College London in the United Kingdom. EPIC received substantial financial support from the Europe Against Cancer Program of the European Commission.*

*EPIC was designed to investigate the relationships between diet, nutritional status, lifestyle and environmental factors and the incidence of cancer and other chronic diseases. EPIC is a large study of diet and health having recruited over half a million (520,000) people in ten European countries: Denmark, France, Germany, Greece, Italy, The Netherlands, Norway, Spain, Sweden and the United Kingdom.*

*You can get more information on the EPIC website at:  
<http://epic.iarc.fr/>*

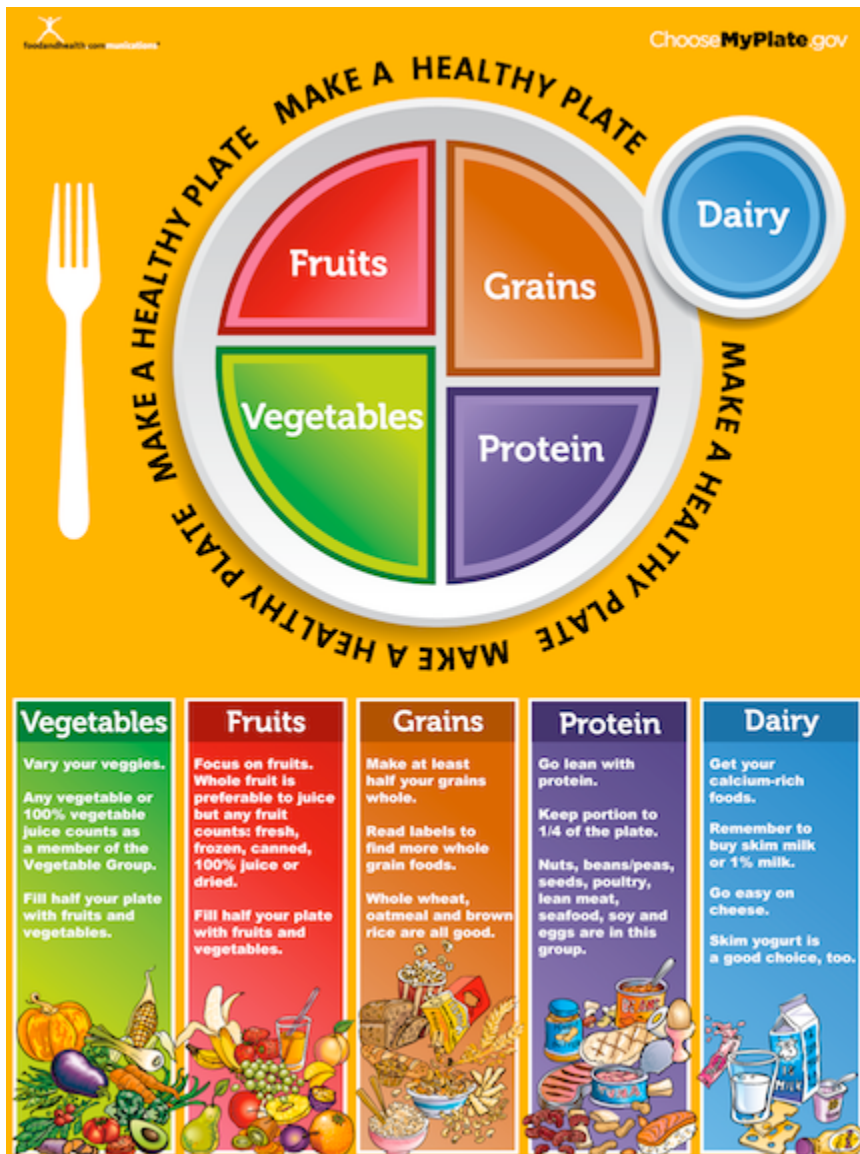
**The final part we had a problem with was their reference to the USDA food pyramid. The USDA officially unveiled MyPlate and retired the food pyramid on June 2, 2011.** The movie “Forks Over Knives” wasn’t released until August 30, 2011. That gave them two months to revise the segment and show the biggest change in the USDA recommendations in decades.

MyPlate is easier to use because it simply shows a dinner plate with sections marked off to give you an idea of how much should be filled with various food groups. Now there are still significant problems with MyPlate.

1. It still reserves a space for dairy, even though more than 50% of the world’s population are lactose intolerant. That should be removed.
2. MyPlate still shows separate sections for “protein” and “vegetables.” That’s a problem because at first glance it makes people think they can’t get protein from vegetables.

- The fruit section allows fruit juices and dried fruit. Both are poor substitutes over whole fruit because of their extremely high levels and concentrations of sugar.

Below is the current MyPlate graphic and descriptions of what should be in each of the plate sections.



**Despite these errors in the film, the message should not be lost. Reducing consumption of meats and replacing that with whole fruits and**

**vegetables can provide significant short and long-term health benefits. It's also a very good thing for the environment because of the reduction in the environmental footprint required to produce the food.**