

# Nutrition Action

SEPTEMBER 2014 \$2.50

 HEALTH LETTER®  
 CENTER FOR SCIENCE IN THE PUBLIC INTEREST

# 1 in 8

## WHAT YOU MAY NOT KNOW ABOUT BREAST CANCER

BY BONNIE LIEBMAN



A friend, a colleague, a cousin, a mother, sister, or daughter. We all know someone who has been diagnosed with breast cancer. A woman's lifetime risk is one in eight.

And unlike heart attacks or strokes or diabetes, breast cancer seems to strike women who have no obvious risk factors.

"That's one reason it's so frustrating, especially to younger premenopausal women who have breast cancer," says Walter Willett, of the Harvard School of Public Health.

"They say, 'I'm doing everything right,' and they are. Being health conscious does not seem to prevent breast cancer."

Nevertheless, the disease isn't a total mystery. There are ways to lower your risk. But misunderstandings abound. Here's what you may be missing.

*Continued on page 3.*



MEMO FROM MFJ

# Big Fat Confusion



Confused *Nutrition Action* readers have been asking me how we could have gotten it so wrong on saturated fat. Why didn't we see that the villain in the heart disease story isn't sat fat, but sugar? And how could the American Heart Association and the National Heart, Lung, and Blood Institute have missed that too?

The chorus of those correcting us includes:

- *New York Times* food columnist Mark Bittman ("Butter is Back," ran his headline),
- journalist Nina Teicholz, author of *The Big Fat Surprise: Why Butter, Meat & Cheese Belong in a Healthy Diet*, and
- the author of *TIME* magazine's June 23rd cover story ("Eat Butter. Scientists Labeled Fat the Enemy. Why they were wrong").

The May and June issues of *Nutrition Action* explored this topic, but I want to highlight a few points that have contributed to the confusion.

The debate over which is worse, sugar and white flour or saturated fat, has been percolating for years. But the pot boiled over in March, when an "exhaustive new analysis" (as *The New York Times* put it) was published in the *Annals of Internal Medicine*.

The meta-analysis reported that people had the same risk of heart disease whether they ate a diet high in saturated fat (in meat, dairy, and tropical oils) or one high in polyunsaturated fats (in foods like soybean oil, mayo, salad dressing, and fish). Newspapers, magazines, and talk shows just couldn't resist a man-bites-dog story line like that.

Since then—and you haven't read about it in *TIME* or the *Times*—that study has been blasted by leading heart disease researchers.

In a letter published in the *Annals*, CSPI's

Bonnie Liebman and co-authors pointed out a crucial flaw in the meta-analysis, which combined the results of clinical trials that replaced saturated fat with polyunsaturated fat: it included a trial in which some of the saturated fat was replaced with a high-trans margarine. Trans fat *increases* the risk of heart disease. (The authors buried the trans detail in an online supplement.)

Removing that one trial from the meta-analysis reverses the results and shows that people who replaced saturated fat with polyunsaturated fats had a *lower* risk of heart disease. (Those trials and other controlled studies, not the 1950s Seven Countries Study that Teicholz dwells on, are the evidence that experts rely on.)

Dog bites man. No story.

Some contrarians also argue that America's obesity epidemic was caused by those who advocated a low-fat diet. Food companies—and consumers—they maintain, replaced fat with sugar, which is what made us fat.

There's just one problem: we *didn't* replace fat with sugar. Most low-fat or fat-free foods on supermarket shelves contain no more sugar (or carbs) than their higher-fat counterparts. What's more, over the past 40 years, we've been eating *more* fat, not less.

Looking for a culprit for the obesity epidemic? Blame it on the billions spent on ads for sodas and fast food, on the 1,000+-calorie restaurant meals, and on the 24/7 availability of cheeseburgers, fries, shakes, pizzas, burritos, fried chicken, movie theater popcorn, muffins, nachos, soda pop, etc.

It doesn't take an exhaustive new analysis to see *that*.



*TIME* isn't on your side.

Michael F. Jacobson, Ph.D.  
Executive Director  
Center for Science in the Public Interest

The contents of NAH are not intended to provide medical advice, which should be obtained from a qualified health professional.

The use of information from **Nutrition Action Healthletter** for commercial purposes is prohibited without written permission from CSPI.

© 2014 Center for Science in the Public Interest.

2 NUTRITION ACTION HEALTHLETTER ■ SEPTEMBER 2014

For permission to reuse material, go to [copyright.com](http://copyright.com) and search for Nutrition Action.

The Center for Science in the Public Interest (CSPI) is the nonprofit health-advocacy group that publishes Nutrition Action Healthletter. CSPI mounts educational programs and presses for changes in government and corporate policies.

### Want to work for us?

We are seeking a Ph.D. in nutrition, epidemiology, or public health (diet and health focus) with at least 5 years' experience in evaluating studies to research and draft articles for NAH.

To view the full job description, go to [www.cspinet.org](http://www.cspinet.org).

### EDITORIAL

- Michael F. Jacobson, Ph.D.**  
Executive Editor
- Bonnie Liebman, M.S.**  
Director of Nutrition
- Stephen B. Schmidt**  
Editor-in-Chief
- Jayne Hurley, RD**  
**David Schardt**  
Senior Nutritionists
- Stephanie Scarmo, Ph.D., M.P.H.**  
Staff Scientist
- Kate Sherwood**  
Culinary Director
- Paige Einstein, RD**  
**Lindsay Moyer, M.S., RD**  
**Camilla Peterson, M.P.H.**  
Project Coordinators
- Jorge Bach**  
Art Director

### CIRCULATION MANAGEMENT

#### Bill Dugan

- |                 |                       |
|-----------------|-----------------------|
| Debra Brink     | Damon Dorsey          |
| Louella Fennell | Jennifer Green-Holmes |
| Brian McMeley   | Nat Parsons           |
| Myriam Pierre   | Chris Schmidt         |
| Sheila Thomas   | Ken Waldmiller        |

### SCIENTIFIC ADVISORY BOARD

- Kelly D. Brownell, Ph.D.**  
Duke University
- Greta R. Bunin, Ph.D.**  
Children's Hospital of Philadelphia
- Caldwell B. Esselstyn Jr., M.D.**  
Cleveland Clinic Foundation
- Stephen Havas, M.D., M.P.H., M.S.**  
Northwestern University Medical School
- Norman M. Kaplan, M.D.**  
Southwestern Medical Center  
University of Texas, Dallas
- JoAnn E. Manson, M.D., Ph.D.**  
Harvard Medical School
- Julie Mares, Ph.D.**  
University of Wisconsin
- Susan Taylor Mayne, Ph.D.**  
Yale University
- J. Glenn Morris, Jr., M.D., M.P.H. & T.M.**  
Emerging Pathogens Institute  
University of Florida
- Susan B. Roberts, Ph.D.**  
USDA Human Nutrition Research Center  
on Aging, Tufts University
- Frank Sacks, M.D.**  
Harvard Medical School
- Jeremiah Stamler, M.D.**  
Northwestern University Medical School
- Regina G. Ziegler, Ph.D., M.P.H.**  
National Cancer Institute

*Nutrition Action Healthletter* (ISSN 0885-7792) is published 10 times a year (monthly except bi-monthly in Jan./Feb. and Jul./Aug.) by The Center for Science in the Public Interest (CSPI), 1220 L Street NW, #300, Washington, DC 20005. *Periodicals postage paid at Washington, DC and additional mailing offices.*

POSTMASTER: Send address changes to *Nutrition Action Healthletter*, 1220 L Street, NW, Suite 300, Washington, DC 20005.

### SUBSCRIBER SERVICES

The cost of a one-year subscription or gift (10 issues) is \$24; two years are \$42. For bulk subscriptions, please write for details. To change your address, send us your subscriber number and your old and new address. If you don't want us to exchange your name, send us your name and mailing-label information.

Mail: CSPI, 1220 L Street NW, Suite 300, Washington, DC 20005  
E-mail: [circ@cspinet.org](mailto:circ@cspinet.org) Tel: (202) 777-8393  
Internet: [www.cspinet.org](http://www.cspinet.org)

Expiration date is in the upper center of your mailing label. Your subscriber number precedes the expiration date.

**GUARANTEE!** We'll give you 2 FREE ISSUES of *Nutrition Action* if there's ever a problem with your subscription.

## 1 IN 8

WHAT YOU MAY NOT  
KNOW ABOUT BREAST  
CANCER

An estimated 232,670 U.S. women will be diagnosed with breast cancer in 2014, and roughly 40,000 will die of the disease. Only one other cancer—lung—kills more women. But unlike lung cancer, breast cancer has no obvious cause. Here's what you may not know.

## 1. Breast cancer is not a total mystery.

"We know how to prevent almost all breast cancer," says Walter Willett, chair of the nutrition department at the Harvard School of Public Health. It's just not a very good solution.

"First, you keep girls in a semi-starved state as they're growing to prevent them from menstruating until they are about 17 or 18," he says. "Then you make sure they get pregnant and have child after child and keep breastfeeding so that they don't menstruate in between."

Why would that work?

"Breast cancer risk is related in part to the number of menstrual cycles a woman has," explains Willett. "The cycles make the breast tissue multiply, and the more that cells multiply over a lifetime, the higher the risk."

That may be why both early menarche and late menopause raise the risk (see "Are You at Risk?" p. 6).

"In China until quite recently, the onset of menstrual cycles was around 17 or 18 years of age," notes Willett. "Girls were working the fields for long hours."

Until the twentieth century, a life with fewer menstrual cycles was the norm.

"Unfortunately, our lifestyle—which has many benefits that we certainly don't want to give up—has set us up for breast cancer," adds Willett.

Even if you look beyond menstrual and reproductive cycles, we know how to prevent many breast cancers.

"It's clear that weight gain during adult life is related to the risk of postmenopausal breast cancer," says Willett.

Taking hormones after menopause also puts women at risk.<sup>1,2</sup> "Hormone replacement therapy, especially estrogen plus

progestin, increases risk," he explains.

"On average, Japanese women do not gain weight during adult life, and until very recently have not used hormone replacement therapy. Those two factors account for half of the difference between the United States' higher breast cancer rates and Japan's lower rates. So those are very important pieces of the picture."<sup>3</sup>

## 2. Extra weight matters.

If you're postmenopausal, extra pounds boosts your risk of breast cancer. And it doesn't have to be many pounds.<sup>4</sup>

"It's not just obesity," notes Regina



**Extra pounds appears to raise the risk of postmenopausal breast cancer by increasing estrogen and insulin levels.**

Ziegler, senior investigator at the National Cancer Institute. "Postmenopausal women who are overweight have a higher risk than those who are normal weight."

(Premenopausal women who are heavy have a *lower* risk of breast cancer. But excess weight raises their risk of type 2 diabetes and other health problems.)

How does extra pounds promote post-

menopausal breast cancer? After menopause, a woman's ovaries stop producing estrogen. At that point, most of her estrogen is made by fat cells. So the more fat cells she has, the higher her blood levels of estrogen—which travels through the blood as estradiol.

"Women who are obese have about three times the circulating levels of estradiol compared to lean women," says Willett. "That's a huge difference. And we see some increase in risk even in women who gain 5 to 10 pounds. It's not just women who gain 50 or 60 pounds."

Roughly 80 percent of breast tumors are hormone-receptor positive—that is, they are fueled by estrogen and/or progesterone.<sup>5</sup> (Those tumors are usually easier to treat—with drugs that block estrogen production—than tumors that are not fueled by those hormones.)

But estrogen alone may not explain why heavier women have a higher breast cancer risk. They're also more likely to have higher insulin levels, which may also fuel tumors.

When researchers looked at women who were not taking estrogen after menopause, those with the highest insulin levels had 2½ times the risk of breast cancer of those with the lowest insulin levels, after taking estradiol levels and weight into account.<sup>6</sup>

"Extra weight works only partially by raising estradiol," explains Ziegler.

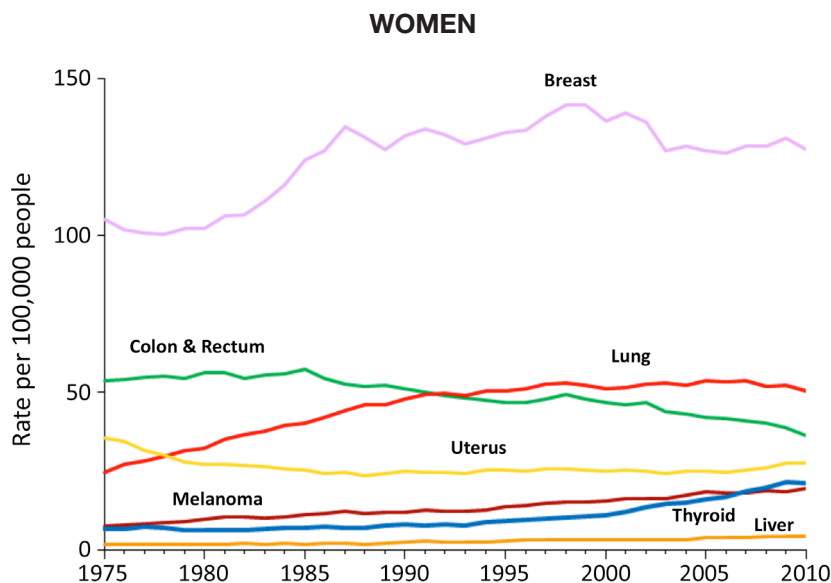
What's more, extra pounds may increase the risk of a recurrence in women who have had breast cancer, according to the American Cancer Society and a workshop at the Institute of Medicine (IOM), which is part of the National Academy of Sciences.<sup>7,8</sup>

But regardless of how extra padding works, the message is the same.

"The main point for postmenopausal



## Cancer Incidence Rates



Age-adjusted to the 2000 US standard population and adjusted for delays in reporting.  
Source: Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2013.

**Ups & Downs.** Breast cancer diagnoses climbed rapidly between 1980 and 1987, largely because of an increase in tumors detected by mammograms. The incidence rose again in the late 1990s, thanks to the obesity epidemic and the widespread use of hormones after menopause. Between 2002 and 2003, diagnoses (especially of estrogen-positive tumors) dropped sharply after a major trial found that taking hormones raises the risk of breast cancer and many women stopped using them.

breast cancer is to weigh as close as you can to what you weighed at age 18," says Willett.

"To anybody who's afraid of estrogen-like chemicals in the environment, I would say, we have seen the enemy and it is us," he adds. "We are the big source."

### 3. Environmental estrogens may not matter.

Could estrogen-like chemicals like BPA and other plasticizers explain why breast cancer strikes so many women?

So far, there isn't much evidence from human studies that those chemicals matter. That's what the Institute of Medicine found in its 2011 report, *Breast Cancer and the Environment: A Life Course Approach*, which was commissioned by Susan G. Komen for the Cure.<sup>9</sup>

"I am not a fan of pesticides in food or chemicals in the environment that we now find ubiquitously in human tissues,"

says David Hunter, the Vincent L. Gregory professor in cancer prevention at the Harvard School of Public Health.

"We definitely can't give them a pass. But the evidence of an association with breast cancer in humans is very limited, so a lot depends on how confident you are extrapolating from test-tube and animal data to give advice to people."

And it has gotten tougher to gather data in humans.

"Increasingly, there is evidence that childhood and adolescent and young adulthood exposure is important," says Hunter, who served on the panel of experts who wrote the IOM report.

"We've made it even more difficult to gather human evidence by pointing the exposure window back to many decades prior to the cancer diagnosis. Nobody's got a 50-year prospective study."

Of course, it's sensible to avoid potentially harmful chemicals anyway.

"If women are worried about their chil-

dren, and it's possible to avoid exposure to pesticides and plasticizers without greatly altering one's lifestyle, I would say, why not?" says Hunter.

"That may have other health benefits that have nothing to do with breast cancer," he adds. "But we can't pretend that we know for certain that that's going to reduce a child's breast cancer risk later in life. It's just very, very hard to establish cause and effect, particularly with cancer, when you may be looking at a 40- or 50-year exposure."

### 4. Genes play a small role in most women.

Some call it the "Angelina effect."

Since May 2013, when actress Angelina Jolie announced that she had had a double mastectomy to lower her risk of breast cancer, doctors have seen a jump in the number of women getting tested for genes that cause the disease.

Jolie had good reason to get tested: her mother had breast cancer and died of ovarian cancer at age 56, her grandmother died of ovarian cancer at age 45, and her aunt died of breast cancer at age 61, shortly after Jolie announced her mastectomy.

The U.S. Preventive Services Task Force doesn't recommend that *all* women get tested, because most don't have the genes that make a big difference in risk.<sup>10</sup>

"Two types of genetic susceptibility variants affect risk," says Hunter. "First,



Angelina Jolie got tested for mutations in the *BRCA1* and *BRCA2* genes because she had a mother, grandmother, and aunt with breast or ovarian cancer. Should you get tested? The CDC's website [knowbrca.org](http://knowbrca.org) can help you decide.

there are the *BRCA1* and *BRCA2* mutations, which increase the risk of breast cancer 20-fold or more.”

The *BRCA* mutations—Jolie has *BRCA1*—account for about 5 to 10 percent of breast cancers (and 10 to 15 percent of ovarian cancers). They’re broken versions of the genes for building proteins that prevent tumors by repairing damaged DNA.

The second type of genetic susceptibility variants increase the risk of breast cancer by only 10 to 20 percent. “We now have a catalogue of over 100 so-called low-risk variants,” says Hunter.

Are some women at greater risk because those variants make them metabolize pesticides (or other chemicals in the environment) differently?

“We thought if we found a lot of the low-risk variants in these carcinogen-metabolizing genes, that would point the finger at environmental factors,” explains Hunter. “The fact is, almost none of them have been found in those genes.”

Instead, those variants seem to regulate how cells change as we grow and develop.

“They seem to be controlling when genes get switched on and off in which organs and at what time of life,” says

Hunter. “So again, this points back to earlier life events, not to the environment.”

## 5. Alcohol boosts risk.

“Alcohol is related to both premenopausal and postmenopausal breast cancer,” says Willett. “And the more you drink, the higher your risk.”

Drinking over more of your life also matters. “Women who started drinking earlier in life and then stopped, their risk goes down,” Willett explains. “The highest risk is in women who started consuming alcohol early and continued.”

And it’s not just women who overdo it.<sup>11</sup>

“We now see a 17 percent increased risk with only one drink every other day,” notes Willett. “What’s remarkable is how modest that amount is. With colorectal cancer, you don’t see much increase in risk until you get to over two drinks a day.”

Alcohol’s ability to raise blood estrogen levels appears to explain at least part of the increased risk.<sup>12</sup> “But we’re still not entirely sure whether it’s limited to the increase in estrogen or whether there’s



more to it than that,” adds Willett.

Could teenage drinking pose a particularly potent threat?

“That’s been a worry from the beginning, because the breast is more sensitive then,” says Willett.

When he and others tracked nearly 6,900 teens aged 13 to 20 for five years, each daily serving of alcohol they consumed was linked to a 50 percent higher risk of benign breast disease.<sup>13</sup> (Some types of benign breast disease are risk factors for cancer.)

“So far we haven’t seen a massive time bomb due to teenage drinking,” says Willett. “But it deserves some more looking.”

## 6. Keep moving.

“More than 100 epidemiological studies have looked at the risk of breast cancer and physical activity,” says Heather Neilson, a Canadian exercise researcher at Alberta Health Services in Calgary.

“The majority have found that women who are the most physically active have a 10 to 25 percent lower risk than women who are the least physically active.”

Most studies have tracked postmenopausal women, but some have looked at younger women.<sup>14,15</sup> And others have looked at those who already have breast cancer.<sup>16</sup>

“The evidence is growing that women have a lower risk of dying of breast cancer if they are more active after diagnosis,” notes Neilson.

Of course, something else about women who exercise might explain their lower risk of getting or dying of the disease. Only trials that randomly assign women to exercise or not can find out.

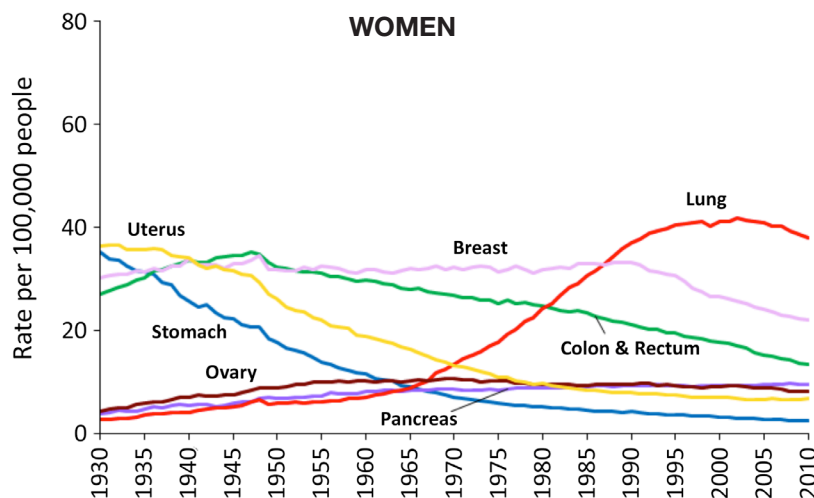
A recent year-long trial—the Nutrition and Exercise for Women (NEW) study—was a surprise.

The trial assigned 439 overweight or obese postmenopausal women to:

- a weight-loss diet, or
- aerobic exercise (45 minutes a day for five days a week), or
- diet plus exercise, or
- a control group (which was told not to make diet or exercise changes).

The results: estradiol, insulin, inflammation, and other markers of risk improved (just about equally) in both the diet and diet-plus-exercise groups (which lost an average of 20 pounds). However,

## Cancer Death Rates



Age-adjusted to the 2000 US standard population.

Source: National Center for Health Statistics, Centers for Disease Control and Prevention, 2013.

**Going down.** Breast cancer death rates have been dropping since 1990, probably because of early detection and better treatment. Lung cancer kills more women because its survival rates are much lower.



## Are You at Risk?

These factors raise the risk of a first (or subsequent) breast cancer. To better judge *your* risk, talk to your doctor or go to:

cancer.gov/bcrisktool or  
yourdiseaserisk.wustl.edu

### Your risk is **more than 4 times higher** than someone without these factors if:

- you are 65 or older (though the risk keeps increasing until age 80)
- you have been diagnosed with atypical hyperplasia after a biopsy
- you have a genetic mutation for breast cancer (*BRCA1* and/or *BRCA2*)
- you have been diagnosed with lobular carcinoma in situ (abnormal cells in breast lobules)
- your mammogram shows dense breasts
- you had breast cancer before age 40
- two or more of your first-degree relatives (mother, sister, or daughter) had breast cancer before age 50

### Your risk is **about 2 to 4 times higher** than someone without these factors if:

- you had breast cancer at age 40 or later
- your estrogen or testosterone levels are high (and you're postmenopausal)
- you have had high-dose radiation to the chest (often as treatment for Hodgkin lymphoma)
- one of your first-degree relatives (mother, sister, or daughter) has had breast cancer

### Your risk is **10% to 2 times higher** than someone without these factors if:

- you drink alcohol regularly
- you are of Ashkenazi (Eastern European) Jewish heritage
- you or your mother took diethylstilbestrol (DES) while pregnant (before 1971)
- your menstrual periods started before age 12
- you are tall
- you were older than 30 during your first full-term pregnancy
- you went through menopause after age 55
- you never breastfed a child
- you had no full-term pregnancies
- you are overweight or obese (and postmenopausal)
- you have had ovarian, uterine, or colon cancer
- you took estrogen plus progestin after menopause for more than five years (though the risk diminishes five years after you stop)

### These factors **do not increase** your risk:

- abortions, antiperspirants, breast implants, hair dyes, underwire bras

Adapted from *Breast Cancer Facts & Figures 2013-2014*, American Cancer Society (cancer.org/research/cancerfactsstatistics/breast-cancer-facts-figures).

the exercise-only group's markers were not significantly different from the control group's.<sup>17</sup>

"The NEW trial strongly implies that for overweight or obese postmenopausal women, most of the benefit of exercise comes from weight loss," says Neilson.

Still, exercise could lower breast cancer risk by some mechanism that wasn't examined in the NEW study.

"The epidemiological evidence that exercise lowers the risk of breast cancer is quite strong, so there's probably something about physical activity that we don't understand, or different pathways that we're not measuring," says Kristin Campbell, an associate professor of physical therapy at the University of British Columbia who co-authored the NEW trial.

For example, says the National Cancer Institute's Regina Ziegler, "we're looking at whether physical activity changes how the body metabolizes estrogen."

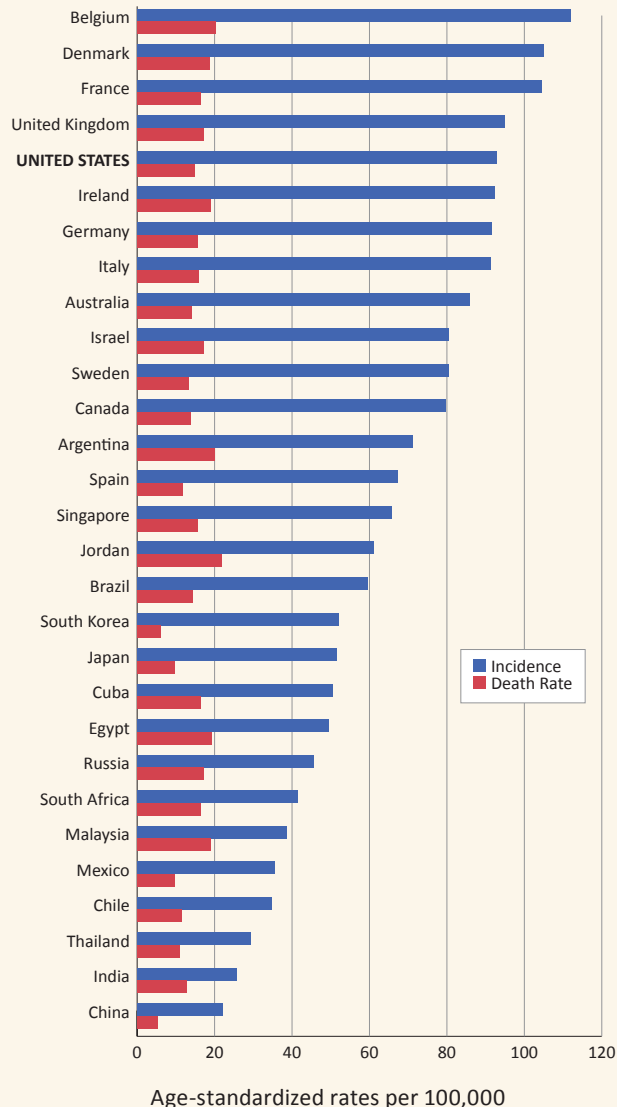
In the meantime, they all recommend exercise, whether you lose weight or not.

"Physical activity helps prevent weight gain in the future and helps maintain weight loss," says Campbell. "And it improves cardiovascular health, type 2 diabetes, mental health, and quality of life, so it's obviously a great benefit."

## 7. Beware of radiation from CT scans.

Studies in humans find little evidence that *non-ionizing* radiation—like microwaves or radio waves—is a cause of breast cancer, said the Institute of Medicine report.<sup>8</sup> But it did point a finger at another kind of radiation: CT (also called CAT) scans.

## Country by Country



Higher-income countries (except Japan) typically have a higher incidence of breast cancer, in part because they're better at diagnosing the disease. But they're also better at treating breast cancer, so death rates vary less widely from country to country.

Source: globocan.iarc.fr/Pages/summary\_table\_site\_sel.aspx.

"There's been a large increase in medical imaging that involves ionizing radiation, particularly with CT scans," says Harvard's David Hunter. That's partly because the imaging is so much better than it was 20 or 30 years ago.<sup>18</sup>

"Nobody thinks that CT scans are a

## Still Hazy After All These Years

Here's the latest on some still-uncertain links between diet and breast cancer.



■ **Fruits & vegetables.** “Several studies have reported that women who consume more fruits and vegetables, especially ones that are rich in carotenoids like beta-carotene, have a reduced risk of postmenopausal breast cancer, especially for estrogen-receptor negative disease,” says the National Cancer Institute’s Regina Ziegler.<sup>1</sup>

“And any lifestyle change that reduces the risk of estrogen-negative breast

cancer would be really, really good.” That’s because researchers know less about tumors that aren’t fueled by estrogen.

“Estrogen-negative breast cancer is more lethal than estrogen-positive cancer, and less is known about preventing it, so that makes this finding especially interesting,” says Harvard’s Walter Willett. “Fruits and vegetables have a pretty small impact overall on cancer, but this is one case where there may be some benefit.”

■ **Vitamin D.** Earlier evidence had suggested that women with higher blood levels of vitamin D have a lower risk of breast cancer, but the picture is muddled.

“We’re now analyzing vitamin D levels for 24,000 women from 17 cohorts around the world,” says Ziegler. “That should tell us whether the blood levels that people currently attain from sunlight, food, and supplements protect against breast cancer.”

Meanwhile, the VITAL trial is testing whether women who take 2,000 IU a day of vitamin D for several years are less likely to get breast cancer than placebo takers. “That should tell us whether high doses reduce risk,” notes Ziegler.

■ **Soy.** Over the years, the pendulum has swung from seeing soy as a food that prevents breast cancer to seeing it as one that promotes breast cancer (see “Soy Oh Soy,” p. 9).

“We can’t look at soy very well in our studies of U.S. women, because they don’t consume enough,” says Willett. “Data from a study in Shanghai suggest that soy consumption during adolescence and early life may reduce breast cancer risk, but there’s not much benefit later in life.”<sup>2</sup>

■ **Meat or saturated fat.** Some studies have reported a higher risk of breast cancer in women who consume more saturated fat.<sup>3</sup> “But the effect of saturated fat during midlife or later is weak, if it’s there at all,” says Willett.

However, a meat-heavy diet may boost risk, he argues, especially if it’s eaten in early adulthood.<sup>4</sup>

“Looking at diet earlier in life, when we know that the breast is more susceptible, we’ve seen some increase in the risk of premenopausal breast cancer with red meat,” says Willett.

It’s not clear why. “It’s probably something in red meat other than the fat,” he says. But so far, heme iron or carcinogens that are created when meat is cooked doesn’t seem to explain the risk.



<sup>1</sup> *J. Natl. Cancer Inst.* 105: 219, 2013.

<sup>2</sup> *Am. J. Clin. Nutr.* 89: 1920, 2009.

<sup>3</sup> *J. Natl. Cancer Inst.* 106: dju068, 2014.

<sup>4</sup> *BMJ* 2014. doi:10.1136/bmj.g3437.

major driver of breast cancer rates in the United States,” adds Hunter. “It’s just that here is a known carcinogen where the exposures have actually increased over time, even as the machines have in theory been made safer and become better regulated.”

Most people—including some doctors—don’t realize that in order to produce a 3-D image, a CT scan of the abdomen exposes the body to 400 times more radiation than an ordinary chest X-ray.<sup>19</sup>

“The doses from mammograms are much lower,” says Hunter. (A virtual colonoscopy is a CT scan. An MRI causes no radiation exposure.)

And then there’s the possibility of errors. “There have been documented incidences of overdoses,” notes Hunter. “Regulations probably need to be tighter, given the proliferation of these machines.”

Hunter’s bottom line: “Nobody should be subjected to medical imaging using

ionizing radiation without a good rationale for it. If the situation is not urgent, women should ask about the risks and benefits of having the procedure.” 🍷

<sup>1</sup> *JAMA* 288: 321, 2002.

<sup>2</sup> *N. Engl. J. Med.* 356: 1670, 2007.

<sup>3</sup> *JAMA* 278: 1407, 1997.

<sup>4</sup> *BMJ* 335: 1134, 2007.

<sup>5</sup> *J. Natl. Cancer Inst.* 106: dju0557, 2014.

<sup>6</sup> *J. Natl. Cancer Inst.* 101: 483, 2009.

<sup>7</sup> *CA Cancer J. Clin.* 2014. doi:10.3322/caac.21142.

<sup>8</sup> [iom.edu/Reports/2012/The-Role-of-Obesity-in-Cancer-Survival-and-Recurrence.aspx](http://iom.edu/Reports/2012/The-Role-of-Obesity-in-Cancer-Survival-and-Recurrence.aspx).

<sup>9</sup> [iom.edu/Reports/2011/Breast-Cancer-and-the-Environment-A-Life-Course-Approach.aspx](http://iom.edu/Reports/2011/Breast-Cancer-and-the-Environment-A-Life-Course-Approach.aspx).

<sup>10</sup> [uspreventiveservicestaskforce.org/uspstf/uspstfbrgen.htm](http://uspreventiveservicestaskforce.org/uspstf/uspstfbrgen.htm).

<sup>11</sup> *JAMA* 306: 1884, 2011.

<sup>12</sup> *J. Natl. Cancer Inst.* 93: 710, 2001.

<sup>13</sup> *Pediatrics* 125: e1081, 2010.

<sup>14</sup> *Curr. Nutr. Rep.* 3: 22, 2014.

<sup>15</sup> *Breast Cancer Res. Treat.* 137: 869, 2013.

<sup>16</sup> *J. Natl. Cancer Inst.* 104: 1, 2012.

<sup>17</sup> *J. Clin. Oncol.* 30: 2314, 2012.

<sup>18</sup> *N. Engl. J. Med.* 357: 2277, 2007.

<sup>19</sup> [www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115329.htm](http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115329.htm).

## Bottom Line

- Lose (or don’t gain) excess weight.
- Don’t take hormones (estrogen plus progestin) after menopause.
- Shoot for 30 to 60 minutes a day of moderate-to-vigorous aerobic exercise.
- Drink alcoholic beverages only occasionally.
- Don’t get a CT scan unless you’re sure that it’s necessary (see [cdc.gov/nceh/radiation/ionizing.htm](http://cdc.gov/nceh/radiation/ionizing.htm)).
- For more information:

**AMERICAN CANCER SOCIETY**  
([cancer.org/cancer/breastcancer](http://cancer.org/cancer/breastcancer))

**CENTERS FOR DISEASE CONTROL**  
([cdc.gov/cancer/breast](http://cdc.gov/cancer/breast))

**NATIONAL CANCER INSTITUTE**  
([cancer.gov/cancertopics/types/breast](http://cancer.gov/cancertopics/types/breast))



## Don't Sit for It

**S**itting for hours on end may raise your risk of some types of cancer, even if you get exercise at other times of the day.

Researchers examined the results of 43 studies on a total of roughly four mil-

lion people, nearly 69,000 of whom had been diagnosed with cancer. The risk of colon cancer was 54 percent higher for those who spent the most (versus those who spent the least) time sitting while watching TV and 24 percent higher for those who spent the most time sitting at work or sitting throughout the day. The risk of uterine cancer was 66 percent higher for those who spent the most time sitting while watching TV and 32 percent higher for those who spent the most time sitting throughout the day. And those percentages were independent of how much exercise the participants did.

Sitting for long periods wasn't linked to cancers of the breast, rectum, ovaries, prostate, stomach, esophagus, testes, or kidney, or to non-Hodgkin lymphoma.

**What to do:** These types of studies can't prove that sitting for long stretches increases the risk of cancer. Still, it's worth getting up from your chair and moving around or at least standing up every so often, regardless of how much time you spend exercising at other times of the day. The American College of Sports Medicine recommends "interspersing frequent, short bouts of standing and physical activity between periods of sedentary activity, even in physically active adults."

*J. Natl. Cancer Inst.* 106: dju098, dju135, 2014.

## Older and On the Move

**A** combination of aerobic, resistance, and flexibility training can keep older people on their feet, according to the longest and largest trial to address the question.

Researchers randomly assigned 1,635 sedentary older adults aged 70 to 89 to either a moderate-intensity physical activity program or to a control group that participated in gentle arm stretching exercises and workshops on health.

The physical activity program—which took place both at a fitness center (twice a week) and at home (3 to 4 times a week)—had a daily goal of 30 minutes of walking briskly, 10 minutes of strength training for legs, 10 minutes of balance training, and large muscle group flexibility exercises.

After 2½ years, the physical activity group had an 18 percent lower risk of major mobility disability (an inability to walk roughly

a quarter mile within 15 minutes without sitting or help from another person).

The physical activity group also had a 28 percent lower risk of *persistent* mobility disability, indicating that exercise helps people recover after they temporarily lose mobility.

**What to do:** Go for a walk, swim, run, or bike ride. Play some golf, tennis, or racquetball. Go dancing, take a Zumba class, or do some gardening. Add some strength training and stretching.

For more information, see the National Institute on Aging ([go4life.nia.nih.gov/4-types-of-exercise](http://go4life.nia.nih.gov/4-types-of-exercise)) or the Centers for Disease Control and Prevention ([cdc.gov/physicalactivity/everyone/guidelines/adults.html](http://cdc.gov/physicalactivity/everyone/guidelines/adults.html)).

*JAMA* 311: 2387, 2014.

## Soda & RA

**D**rinking sugar-sweetened sodas may raise the risk of rheumatoid arthritis (RA), an autoimmune disease that causes painful, chronic inflammation of the joints, especially of the hands, feet, and neck. RA strikes women more often than men and is far less common than osteoarthritis.

Researchers tracked 186,900 women for 20 to 28 years. Those who consumed at least one sugar-sweetened soda per day had a 63 percent higher risk of being diagnosed with seropositive rheumatoid arthritis (the most common kind) than those who consumed less than one soda per month. Among women who were diagnosed after age 55, the risk was 2½ times higher for those who drank at least one sugary soda per day.

Diet-soda drinkers had no higher risk of rheumatoid arthritis.

However, women who drank more non-diet soda had lower incomes, exercised less, and consumed a less-healthy diet. The researchers took those differences into account, but it's possible that other, unknown differences could explain the soda drinkers' higher risk.

**What to do:** Avoid sugar-sweetened soda, sports drinks, energy drinks, and fruit drinks. Though more studies are needed on RA, research has linked sugar drinks to a higher risk of weight gain, diabetes, heart attacks, strokes, and gout.

*Am. J. Clin. Nutr.* 2014. doi:10.3945/ajcn.114.086918.

## B's & the Brain

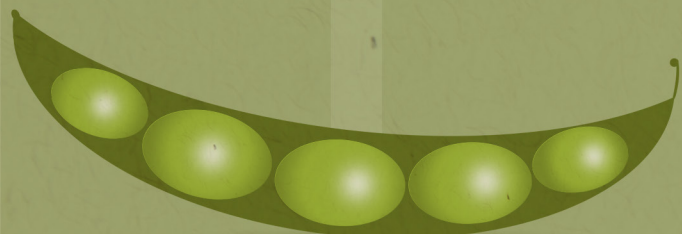
**H**igh doses of B vitamins aren't likely to preserve your memory or thinking ability.

Researchers examined 11 large controlled trials that gave a total of 22,000 (mostly older) people either a placebo or (typically) high doses of folic acid (400 to 2,500 mcg a day), usually along with vitamins B-6 (3 to 50 mg) and B-12 (20 to 1,000 mcg). After 4 months to 7 years, the B-vitamin takers scored no better on cognitive tests than the placebo takers.

**What to do:** High doses of B vitamins won't keep your brain from aging. However, if you're over 50, get the Recommended Dietary Allowance (2.4 mcg a day) of B-12 from a fortified food (like cereal) or a supplement. 🍌

*Am. J. Clin. Nutr.* 100: 657, 2014.





# SOY OH SOY!

## Is it really bad for you?

BY DAVID SCHARDT

**B**ig soymilk fan? Can't live without tofu or veggie burgers? You're in trouble, at least according to the always-reliable Internet, where [thehealthyhomeeconomist.com](http://thehealthyhomeeconomist.com) reveals the "170 Scientific Reasons to Lose Soy in Your Diet" and [mercola.com](http://mercola.com) warns of the "thousands of studies" that link soy to everything from cancer to mental decline. There's more. Lot's more.

Could a food that's been eaten for thousands of years—and that we scarf down to the tune of \$4.5 billion a year's worth of veggie burgers, protein bars, tofu, edamame, and soy yogurt, milk, cereal, spreads, and creamers—be harmful? Here's what we know.

### Breast Cancer

**The rap:** "Researchers have linked soy to an early form of breast cancer."

—[rethinkingcancer.org](http://rethinkingcancer.org)

**The real story:** "When I started out in soy research 20 years ago, most researchers were convinced that soy was a great food for preventing cancer," says Gertraud Maskarinec, a professor at the University of Hawaii Cancer Center.

That's because women in Japan, China, and Singapore, where soy is a diet staple, had (and still have) lower rates of breast cancer than U.S. women.

That belief was shaken in 1996, when a pilot study suggested that soy protein and soy isoflavones—compounds in soybeans that are similar to, but much weaker than, estrogen—stimulated the breast to produce more abnormal cells, which could boost cancer risk.<sup>1</sup>

"The study did an incredible amount of harm to women, because it was interpreted out of proportion to what it was capable of showing," says Maskarinec.

The researchers looked at the breast fluid of 24 women who for six months ate no soy and for six months ate 37 grams a day of soy protein. (That's what you'd get in about a pound of tofu or 1½ cups of shelled and cooked edamame.)

But studies that try to collect fluid from the breast are tricky. "There isn't always enough, and some days there are cells in the fluid and some days there are none,"

explains Maskarinec, whose 2013 study contradicted the earlier results.<sup>2</sup>

"In our study, 82 women consumed a diet containing either two servings of soy foods each day or less than three servings a week, and they ate each diet for six months," she notes.

More soy made no difference. "Less than half the women were able to provide enough fluid. In what we were able to collect, we found no indication that they had more aberrant cells when they consumed lots of soy foods."



Soy protein (isolate, concentrate, flakes, or grits) is added to many protein bars, veggie burgers, cereals, and other foods.

A better way to test whether soy promotes cancer, suggests Maskarinec, is to look at breast density. Women who have dense breasts—their breasts have an abundance of fibrous or glandular tissue

and not much fat—have a higher risk of breast cancer.

"If you give hormone therapy—estrogen plus progestin—to postmenopausal women, within three months the density of their breast tissue goes up," says Maskarinec. Not so with soy.

"We have done quite a few studies, and we have seen absolutely no change in breast density from consuming soy or isoflavones."<sup>3</sup>

Another alarm over soy and the breast: in 1998, researchers reported that genistein, a major soy isoflavone, stimulated the growth of estrogen receptor-positive (ER+) breast tumors in a special strain of mice.<sup>4</sup>

But "a recent study showed that these mice metabolize isoflavones very differently than humans," points out Mark Messina, of Loma Linda University in California. "So they may not be a suitable model for what happens in people."<sup>5</sup> (Messina, a leading authority on soy, consults for companies that make soy foods and supplements.)

Maskarinec's bottom line: "The evidence shows that soy foods don't seem to increase or decrease the risk of breast cancer in Western women."

In 10 studies that tracked nearly 250,000 U.S. and European women for two to 13 years, for example, those who got the most soy isoflavones from food were no more—or less—likely to be diagnosed with breast cancer than those who got the least.<sup>6</sup>

"On the other hand, soy foods do seem to help protect Asian women," says Maskarinec. In four studies that tracked a total of more than 130,000 women in Japan, China, and Singapore for seven to 11 years, those who got the most isoflavones from their food were 24 percent less likely to be diagnosed with breast cancer than those who got the least.<sup>6</sup>

Why the difference? For starters, the "most" isoflavones typically means only

>>>>

about 2 milligrams a day in the United States and Europe, but 25 to 50 mg a day in Asia. The “least” is also far higher there.

What’s more, “In Asian societies, girls grow up eating soy foods, and isoflavones may affect breast tissue early in life in a way that provides some protection later on,” says Maskarinec.

What about women *with* breast cancer? Could soy foods cause tumors to recur? That’s looking less and less likely.

In two studies that tracked 4,658 U.S. women with breast cancer for an average of seven years, those who got the most isoflavones (at least 10 mg a day) from soy foods had a 24 percent *lower* risk of breast cancer recurrence than those who got the least (less than 4 mg a day).<sup>7</sup>

But the soy eaters in both studies were more health conscious, so something else about them could explain their lower risk.

## The Thyroid

**The rap:** “Soy will destroy your thyroid.”  
—foodrenegade.com

**The real story:** “Eating soy foods doesn’t harm the thyroid glands of most people,” says Hossein Gharib, president of the American Thyroid Association and an endocrinologist at the Mayo Clinic College of Medicine in Rochester, Minnesota.

Doctors gauge thyroid function by looking at blood levels of thyroid hormone (thyroxine, or T4) and thyroid stimulating hormone (TSH), which prods the gland to produce more T4 when needed.

In test tubes, soy isoflavones can interfere with the enzyme that helps the thyroid make T4. In most studies done so far in healthy people, however, soy foods or isoflavones have no impact on levels of T4 or TSH.

That was the case for 63 women who ate two to three servings a day of either soy foods (yogurt, burgers, and milk) or beef, chicken, and dairy for 10 weeks.<sup>8</sup> And it was true for 206 middle-aged or older women who took 90 to 200 mg of soy isoflavones or a placebo every day for six months to two years.<sup>9,10</sup>

But soy foods may make people with subclinical hypothyroidism more likely to become hypothyroid, says Gharib.

About 1 percent of the U.S. population has hypothyroidism (an underactive thyroid), which means they have low T4,

high TSH, and symptoms like fatigue and increased sensitivity to cold. Another 3 to 5 percent have subclinical hypothyroidism. They have no symptoms and their T4 levels are normal, but their TSH is high (a sign that the body is working hard to keep T4 levels up).

In 2011, British researchers gave 60 middle-aged and older people with subclinical hypothyroidism a daily dose of 30 grams of soy protein. For eight weeks the powder contained 16 mg of soy isoflavones and for eight weeks it contained only 2 mg. Six of the 60—all



**Looking for isoflavones? Some rough numbers:** 3 oz. firm tofu: 20 mg, ½ cup shelled edamame: 15 mg, 1 cup soymilk: 30 mg.

women—progressed to hypothyroidism while taking the higher dose.<sup>11</sup>

That’s just one small study that needs to be confirmed. In the meantime, “If a routine blood test shows that someone has an elevated TSH level of 5, 6, 7, or 8 and they want to continue eating a lot of soy, they should have their TSH levels tested every six to 12 months to make sure they aren’t progressing to full-blown hypothyroidism,” says Gharib.

## Masculinity

**The rap:** “Soy protein powder strips your masculinity!”  
—thehealthyhomeeconomist.com

**The real story:** “Some people assume that the plant estrogens in soy must be interfering with reproductive hormones in men,” says Christopher D’Adamo, an assistant professor at the University of Maryland School of Medicine in Baltimore. But the evidence to support that claim is scarce.

■ **Testosterone.** Fourteen trials have looked at men with a wide range of testosterone levels who consumed different amounts of soy protein or a placebo (typically a dairy food) every day for 25 days to four years.

“In all 14 studies, testosterone levels did not differ between the two groups,” says Jill Hamilton-Reeves, of the University of Kansas, who led a review of them.<sup>12</sup>

■ **Estrogen.** Thenewcenturyman.com, a website that helps men “reclaim their masculinity,” gets right to the point: “Soy is creating man boobs.”

The scare may have started with a 2008 report in a medical journal about a 60-year-old Texas man who complained of sore, enlarged breasts and a decreased libido.<sup>13</sup>

Tests revealed that his level of blood estrogens was up to eight times higher than the top of the normal range. The man said he was lactose intolerant and drank three quarts of soymilk a day. That would have given him a daily dose of 360 mg of isoflavones, about 10 times what the average man in Asia consumes.

After the man stopped drinking soymilk, his estrogens returned to normal and his breast tenderness disappeared. No other similar cases have ever been reported.

That’s not surprising. In nine studies, estrogen levels remained within the normal range whether men consumed soy foods, isoflavone supplements, or a placebo.<sup>14</sup>

In the largest trial, Australian researchers told 42 healthy men aged 35 to 62 to eat a diet with either 5 oz. of lean meat or 10 oz. of tofu every day. After a month, there was no difference in blood levels of estradiol (the major estrogen) or testosterone.<sup>15</sup>

■ **Fertility.** “Tofu a day, sperm goes away,” read the headline in Canada’s *The Globe and Mail*. The newspaper was describing the results of a 2008 study by researchers at the Harvard School of Public Health.

But the men in the study *didn’t* eat tofu every day...and their sperm *didn’t* go away.

Among 99 male patients at a Boston fertility clinic, total sperm count and sperm quality (that is, how well the sperm moved and were shaped) were the same in those who reported consuming the most soy foods (three to four servings a week) as in those who said they never ate soy.<sup>16</sup>

However, the men who ate the most soy had lower sperm concentration, though it was still in the normal range.

# Soy with Benefits?

Not everyone is scared of soy. Some people go out of their way to get more. Here's what soy can—and can't—do.

■ **Menopausal symptoms.** “It's clear that soy and its isoflavones protect against hot flashes in women during menopause,” says the University of Maryland's Chris D'Adamo.

Since 2000, 13 studies have given a placebo or a daily isoflavone supplement to a total of nearly 1,200 menopausal women in six countries for six weeks to one year. Those taking the isoflavones reported 21 percent fewer hot flashes. And in the nine studies that looked, hot flashes were less severe.<sup>1</sup>

■ **Cardiovascular disease.** In 1999, the Food and Drug Administration ruled that

25 grams of soy protein a day can lower cholesterol levels enough to reduce the risk of heart disease. But since then, the evidence for soy has weakened.

For instance, the Women's Isoflavone Soy Health (WISH) trial gave 325 healthy postmenopausal women 25 grams a day of either soy protein (with 91 milligrams of isoflavones) or milk protein for three years.<sup>2</sup>

“We didn't find strong evidence for any significant cholesterol-lowering effect from the soy,” says USC's Wendy Mack. And thickening of the carotid artery wall, a measure of atherosclerosis, “progressed at the same rate in both the soy eaters and the dairy eaters.”

Eating soy-based veggieburgers or tofu

in place of *red meat*, on the other hand, should help lower your cholesterol and your risk of colon cancer. But that's probably because you're eating less red meat and more of soy's polyunsaturated fat.

■ **Bones.** The evidence that soy isoflavones can protect women's bones is unimpressive.

In two recent studies of a total of 332 women, taking 80 to 200 mg of isoflavones every day for two or three years had no more impact on the density of their hip bones and spines than taking a placebo.<sup>3,4</sup>

<sup>1</sup> *Menopause* 19: 776, 2012.

<sup>2</sup> *Stroke* 42: 3168, 2011.

<sup>3</sup> *Am. J. Clin. Nutr.* 91: 218, 2010.

<sup>4</sup> *Arch. Intern. Med.* 171: 1363, 2011.

Only two good studies have measured what happens when men are fed soy. In the more recent one, researchers gave 32 Canadian young men soy protein with high levels (62 mg) or low levels (2 mg) of isoflavones or milk protein every day for two months.<sup>17</sup>

“Soy protein and isoflavones had no effect on their sperm concentration, sperm count, sperm quality, or semen volume, compared with milk protein,” says co-author Hamilton-Reeves. She concedes, however, that if soy altered the formation of new sperm, two months may have been too short a time to see it.

The earlier study found essentially the same results.

## Nutrients

**The rap:** “Soy blocks vitamin and mineral absorption, denying your body the health building tools it needs.”

—cancerdefeated.com

**The real story:** Raw soybeans contain phytic acid, which can interfere with the body's ability to absorb minerals like iron and zinc.

“But soaking, fermenting, cooking, and other processing methods reduce the phytic acid levels,” says Mian Riaz, director of the Food Protein Research & Development Center at Texas A&M University. And any phytic acid that's left doesn't seem to impair mineral absorption.

For example, researchers gave 69 menopausal women 40 grams a day of soy protein that was either rich or poor in isoflavones or 40 grams of whey (milk) protein. After six months, all the wom-

en had similar blood levels of iron and hemoglobin.<sup>18</sup>

And blood levels of zinc and iron were no different when researchers gave 63 young women two to three servings a day of either soy foods or beef, chicken, or dairy for 10 weeks.<sup>8</sup>

## Cognition

**The rap:** “If we want to protect our brains, we might want to not consume a lot of soy.”  
—anti-soy activist Kaayla Daniel

**The real story:** The soy world got a jolt in 2000, when University of Hawaii researchers reported that among more than 3,300 Japanese-American men, those who ate two or more servings of tofu a week

analyses—only muddied the waters.<sup>20,21</sup>

To see whether soy affects memory and thinking, researchers need to pit it against a (soy-less) placebo, says Wendy Mack, professor of preventive medicine at the University of Southern California.

In 2011, she and her colleagues randomly assigned 313 healthy women aged 45 to 92 to consume 25 grams a day of either soy protein (with 91 mg of isoflavones) or milk protein.<sup>22</sup> After 2½ years, “the soy takers scored no differently than the dairy takers on a battery of tests assessing a broad spectrum of cognitive skills,” says Mack.

And Dutch scientists found no difference on similar tests when they gave 175 older women 26 grams a day of soy protein (with 99 mg of isoflavones) or milk powder for a year.<sup>23</sup>



**Want to boost your soy protein or isoflavone intake? Soy sauce or miso soup won't help.**

during middle age were at greater risk of cognitive decline—and brain atrophy—years later.<sup>19</sup>

Two surveys of Indonesians—with conflicting results and unsophisticated

<sup>1</sup> *Cancer Epidemiol. Biomarkers Prev.* 5: 785, 1996.

<sup>2</sup> *Nutr. Cancer* 65: 1116, 2013.

<sup>3</sup> *J. Nutr.* 139: 981, 2009.

<sup>4</sup> *Cancer Res.* 58: 3833, 1998.

<sup>5</sup> *Am. J. Clin. Nutr.* 94: 1284, 2011.

<sup>6</sup> *Breast Cancer Res. Treat.* 125: 315, 2011.

<sup>7</sup> *Am. J. Clin. Nutr.* 96: 123, 2012.

<sup>8</sup> *J. Womens Health* 20: 771, 2011.

<sup>9</sup> *Arch. Intern. Med.* 171: 1363, 2011.

<sup>10</sup> *J. Med. Food* 6: 309, 2003.

<sup>11</sup> *Clin. Endocrinol. Metab.* 96: 1442, 2011.

<sup>12</sup> *Fertil. Steril.* 94: 997, 2010.

<sup>13</sup> *Endocr. Pract.* 14: 415, 2008.

<sup>14</sup> *Fertil. Steril.* 93: 2095, 2010.

<sup>15</sup> *Br. J. Nutr.* 84: T557, 2000.

<sup>16</sup> *Hum. Reprod.* 23: 2584, 2008.

<sup>17</sup> *Fertil. Steril.* 94: 1717, 2010.

<sup>18</sup> *Am. J. Clin. Nutr.* 76: 165, 2002.

<sup>19</sup> *J. Am. Coll. Nutr.* 19: 242, 2000.

<sup>20</sup> *Dement. Geriatr. Cogn. Disord.* 26: 50, 2008.

<sup>21</sup> *Brain Res.* 1379: 206, 2011.

<sup>22</sup> *Neurology* 78: 1841, 2012.

<sup>23</sup> *JAMA* 292: 65, 2004.



# Presto, Pesto!

BY KATE SHERWOOD

Four steps to a great pesto: **1.** Use intensely flavored ingredients like fresh herbs, roasted nuts, and real parmesan cheese. **2.** Never cook it. **3.** Thin it with a bit of hot water (or pasta cooking water), if needed. **4.** Don't combine it with the pasta until you're ready to eat.

And remember: pesto isn't just for pasta. Try it on chicken, fish, or shrimp, mix it with whole grains, or use it to season salad dressings or jazz up vegetables. 🍴

Got a question or suggestion? Write to Kate at [healthycook@cspinet.org](mailto:healthycook@cspinet.org).

**INSTRUCTIONS:** Put all ingredients into a food processor and pulse until they're uniformly minced and blended together. Each recipe makes 1½ cups.

## Almost Classic Basil

- ¼ cup toasted pine nuts
- ¼ cup grated parmesan cheese
- 1 clove garlic
- 4 cups basil leaves
- 4 cups baby spinach leaves
- ¼ cup extra-virgin olive oil
- ¼ tsp. kosher salt
- freshly ground black pepper

Per ¼ cup

calories 170 | fat 16 g | sat fat 3 g  
sodium 190 mg | carbs 4 g  
fiber 2 g | protein 3 g

## Green Olive

- ½ cup unsalted pistachios
- ¼ cup pitted green olives
- 1 cup cherry tomatoes
- 1 clove garlic
- 1 Tbs. red wine vinegar
- 1 cup flat-leaf parsley leaves
- ¼ cup extra-virgin olive oil
- pinch of red pepper flakes, more to taste
- freshly ground black pepper

Per ¼ cup

calories 160 | fat 15 g | sat fat 2 g  
sodium 150 mg | carbs 4 g  
fiber 2 g | protein 2 g

## Roasted Red Pepper

- ¼ cup toasted slivered almonds
- 1 roasted red pepper
- ¼ cup oil-packed sundried tomatoes
- 1 clove garlic
- 1 Tbs. red wine vinegar
- 1 cup flat-leaf parsley leaves
- ¼ cup extra-virgin olive oil
- ½ tsp. kosher salt
- freshly ground black pepper

Per ¼ cup

calories 150 | fat 15 g | sat fat 2 g  
sodium 210 mg | carbs 4 g  
fiber 2 g | protein 2 g



# RELIABLE SAUCES

## HOW TO FIND THE BEST PASTA TOPPERS

BY JAYNE HURLEY & BONNIE LIEBMAN

**M**ushroom, marinara, or meat? Picking a pasta sauce used to be easy. Today, the Three M's are still around, but you can also find jars of Butternut Squash, Fontina & Asiago, and Sicilian Olive and Wild Caper, among others.

The good news: old standbys like Ragú and Prego are yielding shelf space to sauces from upscale brands (like Cucina Antica and Dell'Amore) and celebrity chefs and restaurants (like Mario Batali and Rao's), which use premium ingredients and cut the salt without sacrificing even a smidgen of flavor.

Here are our *Six Steps to Pasta Sauce Happiness*.

The information for this article was compiled by Lindsay Moyer.

**1. FIND YOUR SERVING.** Nutrition Facts labels assume that you eat just a half cup of tomato or vodka sauce over one cup of pasta. That's only enough spaghetti or whatever to fill up a baseball. Most Italian chain restaurants dish out 3 to 4 cups as an entrée. A cup of pasta plus half a cup of sauce is a good target, but if you use more, don't forget to multiply the calories, sodium, and other numbers on the Nutrition Facts labels.

**2. SEEK OUT LESS SALT.** Most pasta sauces are salty. A half cup can easily eat up 500 milligrams of sodium—a third of your day's limit. But don't despair. A new generation of premium sauces is leading the way to lower levels (200 to 350 mg). Most start with whole tomatoes rather than purée (typically water plus tomato paste), olive oil, and fresh onions, basil, and garlic rather than dried or powdered. They rarely add sugar, and they taste like they've been simmering on the burner all day.

Our favorite brands: Cucina Antica and Dell'Amore (around 250 mg of sodium per half cup) and Rao's (most varieties around 300 mg). But you can cut the sodium to 120 mg with The Silver Palate Low Sodium Marinara or one of Victoria's five Low Sodium sauces. Who needs more salt when your spaghetti or linguine tastes like you're in Tuscany? Those brands are far

more likely to please than humdrum No Salt Added sauces from Eden Organic, Francesco Rinaldi, Trader Giotto's (Trader Joe's) Organic, and Walnut Acres Organic (10 to 40 mg). See the photos on this page and the next for some of the best-tasting Best Bites and Honorable Mentions.

The downside: a jar of Cucina Antica, Dell'Amore, or Rao's costs \$6 to \$9, versus \$2 to \$3 for Bertolli, Classico, Francesco Rinaldi, Prego, or Ragú. On the other hand, if you use just a half cup of a pricey brand, you're paying only about \$1 to \$1.50 to coat a cup of pasta. Try to beat *that* at your local trattoria.

**3. BEWARE OF ALFREDO FAT.** Artery-clogging saturated fat isn't a problem with most tomato sauces. Few—even Barilla Bacon & Cheese and Prego Bacon & Provolone—top 1 gram of sat fat per half cup. Not so for vodka sauces. Most are made with enough cream and/or cheese to supply 2 to 4 grams of sat fat. Still, plenty stayed within our 2½-gram limit. Top taste honors went to Victoria Low Sodium Vodka and Monte Bene Low Fat Vodka.

When it comes to sat fat, the real troublemakers are alfredos. Their Nutrition Facts don't look so bad because they use a small, quarter-cup serving. But when we called a half dozen locations of some of the largest Italian chains, most said that they use as much alfredo as tomato sauce. So our chart doubles the numbers you'll see on most labels, to half a cup.

That gives even "light" alfredos at least 4 grams of sat fat. Most regulars hit 5 to 9 grams. And alfredos from Buitoni and Mario Batali have more cream than any other ingredient, which means about 15 grams (three-quarters of a day's supply) of sat fat and 280 calories in every half cup. Add a 200-calorie cup of pasta, and you're downing the equivalent of a 10 oz. ribeye from Outback Steakhouse.

**4. USE PESTO SPARINGLY.** You needn't worry about calories in a tomato sauce or even most alfredos (unless they're cream laden). But a traditional pesto—made with olive oil,



**Dell'Amore Original Recipe.** A real crowd pleaser. East-coaster? Try Paesana Sicilian Gravy.



**The Silver Palate Low Sodium Marinara.** Smacks of fresh tomatoes. Delightful.



**Rao's Roasted Garlic.** Serious about garlic? Chunky texture? The line forms here.



**Bertolli Olive Oil & Garlic.** Less garlicky than Rao's...and at a price that's nice.



**Mario Batali Tomato Basil.**  
Restaurant quality, with a touch of fresh basil.



**Bertolli Tomato & Basil.**  
Gives Batali a run for his money...for less than half the price.



**Victoria Low Sodium Vodka.**  
Rich, slow-simmered taste. Or try Monte Bene Low Fat Vodka.



**Trader Giotto's (Trader Joe's) Genova Pesto.** A classic basil pesto. *Delizioso!*

fresh basil, pine nuts, parmesan cheese, and garlic—packs 250 to 350 calories into a quarter cup. So you're talking 450 to 550 calories for every cup of topped pasta. Ouch.

Oil coats well, so a quarter cup of pesto should be enough for a cup of pasta. That means you'll have to double the numbers on the Nutrition Facts labels of Le Grand, Mezzetta Napa Valley Bistro, and any other brand that lists half that much (just two tablespoons). And you'll have to *quadruple* the numbers on Whole Foods 365 Traditional Basil Pesto, which uses a one-tablespoon serving. *Seriously?*

Since pesto's fat comes largely from heart-healthy oil, our sat fat limit goes up to 4 grams. But between calories and sodium (which ranges from 150 to 850 mg per quarter cup), we had no Best Bites and only six Honorable Mentions.

You *can* find lower-calorie pestos. *Classico Sun-Dried Tomato and Le Grand Roasted Red Pepper* have only about 100 calories. But neither trims the salt, and they may not satisfy your itch for a traditional basil pesto. If that's what you want, try *Trader Giotto's (Trader Joe's) refrigerated Genova Pesto*. It will cost you 260 calories per quarter cup (which is why it's an Honorable Mention, not a Best Bite), but it has just 140 mg of sodium.

Tip: Stretch your pesto by thinning each quarter cup with a tablespoon or two of the pasta cooking water. Bonus: it should coat the pasta even better.

**5. DON'T FRET OVER SUGAR.** A half cup of tomato sauce typically has about a teaspoon (4 or 5 grams) of naturally occurring sugar. So even no-added-sugar sauces—whether they brag about it on their labels (like *Dell'Amore* and *La Famiglia DelGrosso*) or not—have that much. (Some thinner sauces have just 1 or 2 grams of sugar, probably because they contain less tomato.) And most brands that add sugar typically add just a teaspoon or so.

Our advice: the less added sugar (and that includes honey, evaporated cane juice, and agave), the better. However, finding a good-tasting pasta sauce that's not salty matters more.

**6. DON'T CONFUSE TOMATO SAUCE WITH BROCCOLI.** *Barilla Mushroom and Ragù Chunky Super Vegetable Primavera* each has "2 Servings of Veggies," according to their labels. And *Prego Chunky Garden Mushroom & Green Pepper* provides "40% of Daily Vegetables." It may sound like those sauces are more vegetable-packed than others, but the truth is that *any* sauce that has a half cup of tomato purée could say the same thing. That's because, according to the U.S. Department of Agriculture, a half cup of purée is equivalent to one cup—two servings—of vegetables.

And don't get too excited about the sweet potato and carrot juice concentrates in *Prego Veggie Smart* ("50% of your daily Vegetables"). Experts recommend eating more vegetables not just because they're nutrient-rich, but because they fill you up with fewer calories than most other foods. Experts don't recommend eating more carrot juice concentrate.

Bottom line: Don't look for veggies in your *sauce*. Add them to your *pasta*. It's simple. For every cup of cooked pasta (2 oz. dry), toss a cup of raw broccoli or cauliflower florets or sliced green beans or asparagus into the water with the pasta a minute or two (or three) before the pasta is ready to be drained and mixed with sauce. *Voilà*. You've cut the amount of pasta you'll probably eat, you've upped the veggies, and you've got a more interesting dish.

Or skip the sauce and toss your drained pasta with grilled or sautéed mushrooms, bell peppers, and/or zucchini, or with sautéed spinach or kale. Then top each plate with a tablespoon of grated parmesan, a couple of twists of freshly ground black pepper, and a drizzle of olive oil. Mmm. 🍴



**Dell'Amore Sweet Romana.**  
Bold, a little spicy. Just about perfect.



**Rao's Puttanesca.** Hits all the right puttanesca notes: olives, anchovies, and capers.



**Cucina Antica Spicy Arrabbiata.** Lightly spiced, with a peppery aftertaste.



**Classico Spicy Red Pepper.**  
Easy on the spice, like *Cucina Antica Arrabbiata* (but cheaper).

# SAUCY BITS

**Best Bites** (✓✓) have no more than 250 milligrams of sodium, 150 calories, and 2½ grams of saturated fat (4 grams for pestos).

**Honorable Mentions** (✓) can have up to 350 mg of sodium and 260 calories. All sauces other than alfredos are ranked from least to most sodium, then sat fat, then calories. Alfredos are ranked from least to most sat fat, then sodium, then calories.

	Calories	Saturated Fat (g)	Sodium (mg)
<b>Tomato (½ cup)</b>			
✓✓ Eden Organic, Francesco Rinaldi, Trader Giotto's (Trader Joe's) Organic, or Walnut Acres Organic—No Salt Added <sup>1</sup>	60	0	30
✓✓ The Silver Palate or Victoria—Low Sodium <sup>1</sup>	70	1	120
✓✓ Dave's Gourmet Organic Roasted Garlic & Sweet Basil	70	0.5	130
✓✓ Engine 2 Plant-Strong (Whole Foods) <sup>1</sup>	40	0	140
✓✓ Mario Batali Tomato Basil	70	0.5	180
✓✓ Casa Visco—Italian Style Spaghetti, Red Wine, or Summer Sauce <sup>1</sup>	70	0	190
✓✓ Bea's Brooklyn's Best <sup>1</sup>	80	0.5	190
✓✓ Lucini—Creamy Tomato Ricotta, Hearty Artichoke Tomato, or Robust Tomato Gorgonzola <sup>1</sup>	70	1	230
✓✓ Dell'Amore—except Savory Olive and Spicy Olive <sup>1</sup>	80	0.5	240
✓✓ Cucina Antica or Monte Bene <sup>1</sup>	40	1	240
✓✓ Yellow Barn Biodynamic Puttanesca	70	1	240
✓✓ Sauces 'n Love <sup>®</sup> or Scarpetta—Arrabiata	40	0.5	250
✓✓ Patsy's—except Puttanesca <sup>1</sup>	70	0.5	250
✓✓ Rao's Puttanesca	80	0.5	250
✓ Dell'Amore—Savory Olive or Spicy Olive	90	0.5	270
✓ Yellow Barn Biodynamic—except Puttanesca <sup>1</sup>	80	1	270
✓ Muir Glen Organic <sup>1</sup>	60	0	280
✓ Lucini Sicilian Olive and Wild Caper	50	0	290
✓ Dave's Gourmet—except Butternut Squash and Organic Roasted Garlic & Sweet Basil <sup>1</sup>	60	0.5	290
✓ The Silver Palate Thick and Sassy	70	0.5	290
✓ Amy's Organic Light in Sodium <sup>1</sup>	90	0.5	290
✓ Paesana—Fra Diavolo or Sicilian Gravy <sup>1</sup>	90	0.5	290
✓ Eden Organic Spaghetti	70	0	300
✓ Scarpetta—Cherry Tomato or Marinara	50	0.5	300
✓ La Famiglia DelGrosso Tomato Basil Masterpiece	70	0.5	300
✓ Sauces 'n Love <sup>®</sup> or Scarpetta—Barely Bolognese or Puttanesca <sup>1</sup>	50	0.5	310
✓ Classico—Roasted Garlic or Spicy Red Pepper <sup>1</sup>	50	0	320
✓ Francesco Rinaldi ToBe Healthy <sup>1</sup>	70	0	320
✓ Casa Visco—except Cacciatore, Italian Style Spaghetti, Red Wine, Summer Sauce, and Tomato Basil <sup>1</sup>	90	0	320
✓ San Marzano—Arrabiata or Tomato Basil <sup>1</sup>	80	0.5	320
✓ Patsy's Puttanesca	80	1	320
✓ Rao's—except 4 Cheese, Eggplant, Garden Vegetable, and Puttanesca <sup>1</sup>	80	1	320
✓ Guy Fieri Spicy Tomato	80	0	330
✓ Mama Jess Organic—Bean Good or Garden Good <sup>1</sup>	80	0	330
✓ Bertolli—Arrabiata, Olive Oil & Garlic, or Tomato & Basil <sup>1</sup>	90	0	340
✓ Mario Batali Cherry Tomato Marinara	60	0.5	340
✓ Lucini Savory Tomato Parmigiano	70	1	340
✓ Trader Giotto's (Trader Joe's)—Puttanesca or Organic Spaghetti with Mushrooms <sup>1</sup>	80	1	350
Dave's Gourmet Butternut Squash	100	2.5	360
Prego—Heart Smart, Light Smart, or Veggie Smart <sup>1</sup>	70	0	370

	Calories	Saturated Fat (g)	Sodium (mg)
Bertolli Vineyard or Cento <sup>1</sup>	70	0	400
Casa Visco—Cacciatore or Tomato Basil <sup>1</sup>	80	0.5	400
Barilla or DeLallo <sup>1</sup>	70	0	430
Rao's—4 Cheese, Eggplant, or Garden Vegetable <sup>1</sup>	70	0.5	430
Classico—except Roasted Garlic and Spicy Red Pepper <sup>1</sup>	70	0	440
Mario Batali—Arrabiata or Marinara <sup>1</sup>	70	0.5	460
Mom's or Ragú <sup>1</sup>	80	0.5	470
Prego—Chunky Garden or regular <sup>1</sup>	80	0.5	470
Emeril's or Victoria <sup>1</sup>	90	1	470
365 or 365 Organic (Whole Foods) <sup>1</sup>	50	0.5	480
Bertolli Organic <sup>1</sup>	90	0.5	510
Francesco Rinaldi—except ToBe Healthy <sup>1</sup>	90	0.5	510
Buitoni <sup>®</sup> or Newman's Own <sup>1</sup>	70	0.5	540
Mezzetta Napa Valley Bistro <sup>1</sup>	100	1	550
Amy's Organic <sup>1</sup>	100	1	590

<b>Vodka (½ cup)</b>			
✓✓ Victoria Low Sodium	150	2	120
✓✓ Cucina Antica or Monte Bene <sup>1</sup>	50	2.5	230
✓ Patsy's	80	2	270
Mario Batali	140	4	340
Classico, Newman's Own, or Rao's <sup>1</sup>	90	1.5	440
Prego	160	3	480
Francesco Rinaldi or Victoria <sup>1</sup>	120	2.5	590
Bertolli	140	5	610
Mezzetta Napa Valley Bistro	130	4	700

<b>Alfredo (½ cup)</b>			
Bertolli or Classico—Light <sup>1</sup>	110	4	640
Ragú Cheesy Light Parmesan	120	5	640
Classico—except Light <sup>1</sup>	120	5	700
Prego <sup>1</sup>	150	6.5	740
Bertolli—except Light <sup>1</sup>	180	7	690
Buitoni Light <sup>®</sup>	180	7.5	670
Newman's Own	180	9	820
Buitoni <sup>®</sup>	280	15	720
Mario Batali	280	16	530

<b>Pesto (¼ cup)</b>			
✓ Trader Giotto's (Trader Joe's) Genova <sup>®</sup>	260	3	140
✓ Bear Pond Farm—Artichoke, Spicy Vegan, or Tomato Basil <sup>®1</sup>	230	4	140
✓ Cibo Naturals Sun-Dried Tomato <sup>®</sup>	260	2	170
✓ DeLallo Simply Pesto Sun-Dried Tomato & Olive	250	2.5	230
Buitoni with Basil <sup>®</sup>	270	5	380
Le Grand Roasted Red Pepper <sup>®</sup>	120	1	480
Buitoni Reduced Fat with Basil <sup>®</sup>	230	3	500
Classico Traditional Basil	240	4	560
Classico Sun-Dried Tomato	100	1.5	570
365 (Whole Foods) Traditional Basil	280	4	580
Kirkland Signature (Costco) Basil <sup>®</sup>	330	5	630
Mezzetta Napa Valley Bistro <sup>1</sup>	300	5	700
Trader Giotto's (Trader Joe's) Pesto alla Genovese	250	4	840

✓✓ Best Bite. ✓ Honorable Mention. <sup>®</sup> Refrigerated. <sup>1</sup> Average. Note: Best Bites and Honorable Mentions are for calories, sodium, and saturated fat, not taste.

**Daily Limits** (for a 2,000-calorie diet): **Sodium:** 1,500 milligrams. **Saturated Fat:** 20 grams.

Source: company information. The use of information from this article for commercial purposes is strictly prohibited without written permission from CSPI.

## RIGHT STUFF

### PIZZA MAKEOVER



“Mozzarella, fire roasted eggplant, spinach, tomatoes and crushed red pepper with a spicy tikka masala sauce on a stone-fired crust with *Kashi 7 Whole Grains*, sesame and flax seed.”

Kashi’s single-serve frozen **Indian Tikka Masala Traditional Crust Pizza** doesn’t sound like your everyday pie.

Nor does this one: “Spinach, artichokes, tomatoes, feta and mozzarella cheeses with a greek tzatziki yogurt, cucumber, dill and garlic sauce” on the same stone-fired crust. That’s the company’s **Greek Tzatziki Traditional Crust Pizza**.

Who cares? Everyday pizzas deliver a load of white flour, saturated fat, and sodium. Kashi’s single-serve vegetarian pizzas think outside the box.

Each pizza packs 16 or 17 grams of protein for only 300 calories and 3½ grams of saturated fat. The crust—it contains Kashi’s “seven whole grains and sesame blend” (with oat, triticale, brown rice, wheat, rye, barley, and buckwheat flours)—is 52 percent whole grain, Kashi told us. No other big brands come close.

The sodium (390 milligrams for the Indian and 480 mg for the Greek) is darned good for pizza. Celeste, Red Baron, and most other single-serves hit around 600 to 1,000 mg.

Toss your Kashi into the microwave for two to three minutes, and your meal is almost ready. Just don’t assume that the toppings take the place of a salad or a side of veggies. (They never do.)

“Positively satisfying,” says the label. And positively delish.

kashi.com — (877) 747-2467

## FOOD PORN

### QUESADON'T

“Flour tortillas stuffed with sliced marinated chicken, 3-cheese blend, southwestern spices, applewood smoked bacon & ranch dressing.” **Chili’s Bacon Ranch Quesadillas with chicken** don’t sound like a big splurge.

It’s chicken, for heaven’s sake. And it’s served with “house-made pico de gallo, sour cream & ancho-chile ranch.” That all sounds pretty harmless.

As harmless as 1,760 calories (close to a day’s worth). As harmless as 44 grams of saturated fat and 3,640 milligrams of sodium (more than a two-day supply of each). And as harmless as a load of white flour. For those numbers, you might as well down two full racks of Chili’s Original BBQ Ribs.

The **Bacon Ranch Quesadillas with steak** (1,880 calories) are slightly worse. And the **Santa Fe Chicken Quesadillas** (1,540 calories) are not much better.

Can you see a subtle message here? Say, “Step away from the quesadillas?”

Chili’s offers “Lighter Choices” like Mango-Chile Chicken or Tilapia, Margarita Grilled Chicken, Salmon, and Grilled Chicken Salad.

Each is loaded with 1,000 to 2,500 milligrams of sodium, but at least they have less than 650 calories. And all but the salad come with rice and either broccoli or black beans. (Ask to replace the rice with extra veggies.)

Memo to Chili’s: Make most of the menu lighter, and offer a few “Heavier Choices” for the undernourished.

“More LIFE happens here,” says Chili’s menu. Enjoy it while it lasts.

chilis.com — (800) 983-4637



## dish OF THE MONTH



### Summer on a Plate

Slice or chop a ripe but still firm avocado. Top with plenty of sliced or chopped ripe tomato and a few fresh basil leaves. Finish with a splash of balsamic vinegar, a drizzle of extra-virgin olive oil, and a grind or two of black pepper.

## quick tip

There are plenty of reasons—including lowering your risk of colon cancer—to avoid deli meats. But if you eat them, keep in mind that packaged is less likely to be contaminated with *Listeria* than freshly sliced.