



It's lunchtime, and Dr. Paul Lachance is sitting down to a nice big plate of immune-boosting zinc, with a dash of vitamin C and a side of antioxidants.

He helps guard against high blood pressure with a hefty helping of potassium, but passes up a dose of potentially cancer-inhibiting catechins in favor of a soft drink.

"We all need a 'fun food' once a day," he says with a smile, referring to the soda.

A space-age diet for a healthy-living fanatic? Not at all. To the nutritionally uninformed—that is, to the rest of us—Lachance's lunch would look like nothing more than the daily special at the local Italian restaurant: stuffed clams and shrimp with a twist of lemon, and a salad, washed down with a soda instead of iced tea.

But when you spend your days in the laboratory analyzing the chemical composition of everything from kiwi to coconuts—then studying its impact on the human body—you begin to view mealtime a little, well, differently.

# Advice from Dr. Paul Lachance: Eat Better, Stay Younger

BY LAURA MUHA

Photographed for *Biography Magazine* by Brian Pierce / Vis Vitae, New York City



**A**s much as 70 percent of disease could be prevented if people just modified their diets," says Lachance, 67, director of the Nutraceuticals Institute at Rutgers University in New Jersey, and an internationally renowned expert on the connection between food and health. "We now believe that at least half of all cardiovascular disease and hypertension can be attributed directly to diet. And choosing the right foods can cut the risk of some cancers by as much as half."

He gestures at his salad, which is topped with tomatoes, cucumbers, onions, and carrots—thousands of disease-fighting compounds in a single bowl. "Why not take advantage of them?" he asks. "Your chances of staying healthy go way up."

"Take two cups of blueberries, and call me in the morning."

That's not advice you're likely to get from your doctor the next time you're feeling under the weather. But neither is it as far-fetched as it might seem, says Lachance, one of a growing number of scientists who believe that we may one day be able to pre-

## Reader Poll

We'd like to know your thoughts concerning these food-related questions:

**1** Do you eat at least 5 servings of fruits and vegetables a day?

☐ Yes ☐ No

**2** Do you get most of your vitamins from foods or supplements, or both?

☐ Foods ☐ Supplements ☐ Both

**3** Do you pay more attention to what you eat now than 5 years ago?

☐ Yes ☐ No

**4** Do you read nutrition labels in the supermarket? ☐ Yes ☐ No

You can tell us your opinion in one of two ways:

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October Reader Poll, *Biography Magazine*, 228 East 45th Street, New York, N.Y. 10017

We must receive your vote by November 15, 2000. The results will be posted on our Web site on November 17 and published in our December issue.

## Easy Ways to Sneak More Fruits and Vegetables into Your Diet

**EAT BREAKFAST AND INCLUDE AT LEAST ONE FRUIT.** Studies have found that people who don't are the least likely to get the recommended number of fruits and vegetables during the day.

**CHOOSE TROPICAL FRUITS.** When Lachance analyzed 27 fruits and vegetables, he found that kiwis, mangos, papaya, and avocado were exceptionally rich in nutrients, with kiwis ranking No. 1 in terms of nutrients per calorie. Papayas were second, and avocados weren't far behind, although they had higher calorie and fat counts.

**EAT A GREEN SALAD** at least once a day; it counts as two servings of vegetables, as long as it contains more than lettuce. Instead of garnishing it with the usual tomatoes, onions, and cucumbers, get creative: Toss in a handful of raisins or nuts, or cut-up pieces of apple or pear.

**INSTEAD OF EATING LOW-NUTRIENT ICEBERG LETTUCE** on your sandwiches or in your salads, **SUBSTITUTE A FANCIER BRAND**, such as romaine. The darker the color, the more phytochemicals it contains.

**CHOOSE ICED BLACK OR GREEN TEA OVER SODA;** it contains catechins, which are believed to help prevent cancer. (Note: Herbal teas do not contain significant amounts of catechins.)

**IF YOU DRINK HOT TEA, DON'T PUT MILK IN IT;** it binds some of the micronutrients, preventing them from being absorbed by the body. And for an extra boost of phytochemicals, choose green tea over black.

**IF YOU'RE A DESSERT EATER, CHOOSE FRUIT DESSERTS;** a slice of homemade blueberry or strawberry pie is loaded with phytochemicals. (Content of store-bought desserts can vary.)

**WHEN YOU'RE BUYING FROZEN PRODUCE, SHAKE THE BAG OR THE BOX.** You should be able to hear the individual peas, corn kernels, or broccoli spears rattling around. If all you hear is a klunk, or if you hear nothing at all, the vegetables are encased in ice—meaning that the package was thawed and refrozen somewhere along the way. This causes the breakdown of phytochemicals, so you won't be getting the full nutritional bang for your buck.

vent or treat everything from cancer to cataracts using "prescriptions" we fill in the produce section instead of the drugstore.

"You really are what you eat," he says, laying out just a sliver of the rapidly mounting evidence from recent studies:

☛ People who consume at least five servings of fruits and vegetables a day have a 31 percent lower risk of stroke than those who eat fewer than three helpings.

☛ People who drink between one and two cups of black or green tea a day appear 46 percent less likely to develop coronary artery disease; if they drink four cups, their risk drops by nearly 70 percent.

☛ Women who eat two or three daily servings of whole grain foods such as 100% whole wheat bread, oatmeal, and popcorn reduce their risk of heart disease by nearly 30 percent; those who eat at least five ounces of nuts per week have a third fewer heart attacks than those who don't.

☛ Men who eat at least five apples a week seem to have stronger lung function than those who don't eat any.

☛ And, says Lachance, more than 200 stud-

ies have indicated that people who have higher intakes of fruits and vegetables have a lower incidence of cancers of the gastrointestinal tract, as well as a number of other types of cancer.

Although we've long known that diet plays a role in health—as far back as the fifteenth century, scurvy in sailors was traced to a lack of citrus fruit—it's only in the past two decades that scientists have begun to unravel the connection.

In the process, they've zeroed in on literally thousands of compounds they've dubbed "nutraceuticals"—naturally occurring substances in food that have health-promoting or disease-preventing properties.

It's a category that includes many familiar substances—calcium, for instance, which helps protect against osteoporosis, and the much-touted antioxidant vitamins C, E, and beta carotene, which seem to neutralize potentially disease-causing waste products in the body.

But the term "nutraceuticals" also encompasses thousands of other food compounds which were once considered too unimportant to study, but now seem to be making headlines on a daily basis. Among them:



# The Top Healthy Foods



Apples, avocados, black and green tea, chocolate, corn, grapes, red wine, string beans, strawberries

**Flavonoid-containing foods:** Lower cholesterol and help prevent blood clots; help prevent cancer



Tofu, soy nuts, soy cheese

**Isoflavone-containing foods:** Protect heart health and guard against osteoporosis; may prevent some cancers



Broccoli, bok choy, cabbage, mustard seed

**Isothiocyante-containing foods:** Help protect against cancer



Citrus fruits, vegetable oils, mint, spearmint

**Monoterpene-containing foods:** Help prevent some cancers; protect heart health



Garlic, onions, scallions, shallots

**Allium-containing foods:** Lower cholesterol and blood pressure; may prevent some cancers



Carrots, sweet potatoes, tomatoes, watermelon

**Carotenoid-containing foods:** Help maintain good vision and heart health; may prevent some cancers

*Lycopene*, the substance that makes tomatoes red, and, it turns out, also seems to reduce the risk of prostate and possibly cervical cancers.

*Catechins*, which give black tea its bite and also may have tumor-blocking properties.

*Anthocyanin*, which gives blueberries and eggplant their dark tint, and not only seems to help eyesight, the heart, and memory—and if that isn't enough, may help prevent and treat urinary tract infections. (For other important nutraceuticals, see above.)

Not surprisingly, a multi-billion-dollar industry has sprung up around such discoveries, with beverage manufacturers spiking their drinks with ginkgo biloba (for memory), St. John's wort (for depression), and echinacea (a purported immune-booster); breakfast-cereal manufacturers adding ginseng (which appears linked to stamina) and oat bran (to lower cholesterol) to their products; and supplement manufacturers rushing to compress the latest compounds into pills.

The problem, says Lachance, is that such

products are premature at best, and a gimmick at worst. Yes, researchers know that diet plays a role in health, but they still don't know if it's the individual nutraceuticals themselves that provide the benefits, or whether—as is more likely the case—it's those compounds working in concert with other components of food, possibly even some that have yet to be discovered.

The other concern, Lachance says, is that when people take dietary supplements, they are essentially taking pharmaceutical doses of those nutrients—doses far higher than they ever could get in their diets. And scientists don't know enough about many of them to determine whether there is a dosage at which they cease to be helpful and start to be harmful.

The antioxidant selenium, for instance, is a trace element found in Brazil nuts, garlic, liver, and grains. Without it, immune function is impaired, but too much of it can cause loss of hair and fingernails. Vitamin A is also necessary for good health—but excessive amounts can be toxic to the liver. And one study of

male smokers found that those who were taking high doses of the antioxidant beta carotene over prolonged periods had higher rates of lung cancer than those who didn't.

"We have years and years of research ahead of us—a couple of generations worth—in order to make sense of which nutraceuticals do what, when, and where," says Lachance. "All we can say to people now is, 'Eat more fruits and vegetables, because that's where the key chemicals are.'"

The trouble is that while current dietary guidelines tell us to eat between five and nine of them per day—with nine being ideal—an estimated 80 percent of Americans don't get even the minimum five.

"There's a whole group that doesn't get any fruits and vegetables in any day, unless you count French fries," says Lachance. "That's a hell of a lot of Americans we're talking about. It's a very serious situation—and chances are, they're going to pay the price."

When Lachance was growing up in St. Johnsbury, Vermont, he and his six brothers and sisters ate a diet heavy on meat and



potatoes—hardly ideal by today's standards, but typical of meals in that era. In retrospect, however, he can see that he did get many of the phytochemicals—or plant-based nutraceuticals—now believed to be so crucial, from the homemade soups his mother served every day.

"She'd start with a soup bone and make a stock, and she kept adding to it as the week

went on," Lachance recalled, describing how she poured all the liquid that the vegetables had been boiled in—along with the nutrients that had leached from them during the process—into the soup pot, rather than down the drain, as most people do today.

Lachance's mother was just doing it to be thrifty; she "hadn't the foggiest" that what she was doing was providing her family with

valuable vitamins and minerals, said Lachance. "But obviously a lot of our nutrients as far as vegetables were concerned came through that route."

At St. Michael's College near Burlington, Vermont, Lachance majored in biology, and after his 1955 graduation, he enrolled in the University of Vermont, planning to pursue his doctorate. But when that school dropped the program he was enrolled in, he was forced to transfer to the University of Ottawa in Ontario.

There, he joined researchers who were studying the body's response to cold during the bitter Canadian winters, and trying to figure out ways to protect it—among them, nutritional supplementation. Intrigued, Lachance began studying whether high doses of vitamin C could help protect against frostbite (they did) and wound up obtaining his doctorate in nutrition in 1960.

After a three-year stint as a nutrition scientist with the Air Force, he moved to Houston to become NASA's first nutrition and flight food coordinator, a job that entailed developing a nutrition program for the Gemini and Apollo astronauts.

In 1968, he moved to Rutgers, and when the University launched the Nutraceuticals Institute four years ago in partnership with St. Joseph's University in Philadelphia, he was named its director.

At work, Lachance has a reputation as a serious and careful scientist—the kind of guy who "has the technical expertise, but also a sense of what the consumer is looking for, and wants to make the information available to them," as one colleague puts it.

To that end, Lachance is working in conjunction with other scientists across the country to create a consumer-friendly "encyclopedia" of every known nutraceutical, along with all the scientific data associated with it; although the project is still in its early stages, he hopes that it will one day provide an easy way for consumers to evaluate the claims of various products.

He and his colleagues at Rutgers are also working to develop an "intelligent" microwave oven that would read bar codes on individual products and calculate the exact cooking time necessary for that item, thereby preventing nutrients from being destroyed by overcooking.

And he's served as a nutrition consultant to developing countries around the world; he's particularly proud of a program he helped to develop in Guatemala, whereby tortillas were fortified with soy, three B vitamins, and vita-

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## Fresh or Frozen, Raw or Cooked?

Is fresh produce better for you than frozen? And is raw better than cooked? While most people assume the answer to both questions is yes, in fact, that's often not the case, says Dr. Lachance.

"It depends on what [fruit or vegetable] you're talking about, and the preparation method you use," he says.

When it comes to determining whether fresh is better than frozen, Lachance distinguishes between garden-fresh and market-fresh produce. Garden fresh is preferable, he says, because it's going directly from a living plant to your plate, with little or no time elapsing between the two.

What supermarkets sell as "fresh" produce, on the other hand, actually may have been picked weeks earlier and been sitting in trucks and warehouses since then, with phytochemicals breaking down along the way. (Some fruits and vegetables are at higher risk of this than others—broccoli, for instance, doesn't have a skin to protect its phytochemicals from the damaging effects of

light and air, while mangos "travel well because they're encased," says Dr. Lachance.)

Frozen produce, on the other hand, is picked and frozen at its nutritional peak—meaning that the carrots in your grocery store's freezer case may well contain more vitamins and phytochemicals than the "fresh" ones in the produce section a few aisles away.

The other variable, says Lachance, is how you prepare the fruit or vegetable. Overcooking can break down nutraceuticals, and boiling can cause some compounds to leach into the cooking water.

So frozen green beans may start out with a higher phytochemical content than their produce-section counterpart—but if you boil them, you may actually get fewer phytochemicals than you would if you'd steamed some market-fresh beans.

Lachance's recommendation: Roast, steam, or sauté vegetables instead of boiling them, and don't overdo it—for the highest nutritional punch, cooked vegetables should still have a slight "crunch" to them.

It's also fine to boil veggies in a small amount of water; just be sure to save the cooking liquid (which is rich in nutraceuticals) and add to soup or gravy.

As for whether eating vegetables raw is the best option of all, the answer again is complicated, says Lachance. Many raw food enthusiasts point out that uncooked vegetables contain enzymes necessary for health, which break down during the cooking process; ditto some vitamins, particularly vitamin C and the B vitamins.

On the other hand, says Lachance, most of the same enzymes touted by raw-food proponents are destroyed by stomach acid, and don't make it to the intestinal tract, where they could be absorbed by the body.

And while it's true that cooking can destroy up to 50 percent of some heat-sensitive nutrients, it actually releases others. In raw foods, for instance, beta carotene is trapped in the fibrous walls of plants, but during the cooking process, these break down, making the compound—which the body converts to vitamin A—more easily accessible.

So which is better, raw or cooked? "It's six of one, a half-dozen of the other," Lachance says. His advice: Eat some of both.





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