

PART 2

A Near-Perfect Food

As if flavor weren't enough, cheese is good for you

BY MAX MCCALMAN

Max McCalman is the author of three books on cheese, the most recent being *Mastering Cheese, Lessons for Connoisseurship from a Maître Fromager*, and dean of curriculum for www.artisanalcheese.com. At 57 years old and 150 pounds, he is a picture of health and vitality — and he eats cheese every chance he gets.



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I believe one reason we love cheese is because cheese loves us.

Recognition that it's good for us contributes to our growing appreciation of this wonderful food. We subconsciously recognize cheese as a primordial and near-complete form of sustenance, derived from our first food — milk.

Since milk is the only food necessary during the critically important first weeks and months of our lives — when we're growing faster and learning more than at any other stage of life — it must be good for us. It's difficult to imagine how it could not be.

The composition of the nutrients — the proteins, amino acids, vitamins, minerals, beneficial fats and fatty acids — vary from cheese to cheese. No two cheeses are created equal, which is one reason why it's a good idea to eat a variety of cheeses.

Unfortunately, many people still view the consumption of cheese as an indulgence. Even within the cheese industry itself, I often hear comments suggesting cheese cannot be all that good for you or you should limit the amount you eat. The negative pronouncements most often center on a potential for weight gain and clogged arteries. Fortunately, compelling evidence contradicts those notions.

In *Part 2* of this article on cheese and nutrition, I will point out some of the cheese components that are beneficial to the human heart, arteries, neurological systems, skin, hair, skeleton, and pretty much everything else.

Some cheese lovers claim they're addicted to cheese, which is not a bad thing. The addictive agent is probably casomorphin, an opioid peptide and a byproduct of the proteolysis of casein — the primary protein found in milk from dairy animals — that ends up in the cheese. Opioid peptides are amino acid sequences that mimic the effect of opiates in the brain. They play a role in motivation, emotion, the response to stress and pain, and the control of food intake. More significant than the casomorphin is cheese's near-complete nutrition; ultimately this is what attracts us to cheese.

The nutrients provided by cheese can be found in other foods, though rarely can we derive the balanced, full

complement of those nutrients as efficiently and effectively as we can from those offered in a small quality cheese.

Every once in a while, I read some positive tidbit about cheese in the mainstream media. Invariably it recommends choosing a low-fat cheese. This ignores the beneficial fatty acids derived from milk fat such as omega-3s, lauric acid, and conjugated linoleic acid — CLA. The CLA found in cheese is a successful cancer-fighting fatty acid. [EDITOR'S NOTE: For Max's complete discussion of CLA's cancer-fighting qualities, please see Part 1 of *A Near-Perfect Food* in the Winter 2010/11 issue of *Cheese Connoisseur*.]

I recently came across an article that suggested avoiding all dairy products

could have helped a cancer victim survive. Possibly, though I have my doubts. Eliminating dairy products that included the cancer-fighting CLA, lysine and calcium may have actually reduced the victim's defenses against cancer.

To help allay concerns regarding cheese, take note of the relative safety of cheese. It's a perishable food, certainly; the bad bugs — read bacteria — know a good nutrient when they see it. Incidences of foodborne illnesses that can be attributed to cheese are extremely rare.

According to CDC, FDA, and USDA records, cheese continues to enjoy a great track record for food safety, far safer than seafood, meats, multi-ingre-



dient foods and eggs. Cheese is associated with far fewer foodborne illnesses than fruits and vegetables.

How can this be so?

First, mammalian milk has built-in defenses that protect it and the products crafted from it. Its enzymes help ward off the bad bugs. Some of its defenses are the good bugs found in the milk. These guardians of the milk are especially capable if you don't have to heat-treat the milk. Though required in the production of many cheeses, excessive heating of milk eliminates many of those good bugs as well as some, but not all, of the bad ones. In fact, heat-treated milk may be more susceptible and welcoming to bad bugs because the competing good bugs are largely eliminated.

The scientific concept of quorum sensing theorizes that bacteria communicate with one another. Bacteria communities can detect when competing bacteria outnumber them. Bacteria fight like bullies so when outnumbered, they usually don't put up a fight. Fortunately, good bacteria are stronger than bad ones. If it were the other way around, life as we know it wouldn't exist.

Second, the souring of the milk brings the pH levels down to a level that renders the cheese less attractive for pathogens. Good acid development is part of the desired goal in cheesemaking, or it should be.

Third, the salt added in cheesemaking — beyond what little may be in the milk itself — provides another layer of protection against contamination, salt being a great preservative. Fortunately, it doesn't take a lot of salt to inhibit many pathogens.

These attributes — the good native enzymes in the milk,

the lower pH, and the salt — present three strikes against contamination. The doormat welcoming the bad bugs is essentially rolled up. It should be no surprise that cheese is one of the safest foods available.

super amino acids

In addition to the safety factors, cheese is a protein-rich food. The amino acids that are the building blocks of proteins can be used to synthesize other biomolecules or oxidized into urea and carbon dioxide as a source of energy.

Many of these amino acids (all of which are found in milk to some extent) are found in especially high concentrations in fine cheeses: tyrosine, tryptophan, taurine (though not technically an amino acid, it's often called one, even within the scientific community), and lysine. The first of these — tyrosine — was so named when it was discovered in the 19th century because it was found in high concentration in cheese. The Greek word for cheese is *tyri*.

Tyrosine, a precursor to neurotransmitters, particularly dopamine and norepinephrine, helps the brain produce these natural pain-killing, energizing and mood-boosting chemicals. A deficiency of norepinephrine can lead to depression. This could help explain why photographers say, "Say cheese!"

A number of studies have found tyrosine to be useful during conditions of stress, cold, fatigue, PMS, loss (such as in death or divorce), and prolonged work and sleep deprivation. In human trials, tyrosine has improved memory and cognitive and physical performance, and it's believed to play a role in the treatment of drug detoxification and Parkinson's disease.

Tyrosine helps suppress the appetite and reduces body fat.

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If your internist or cardiologist does not yet credit cheese for its benefits to cardiovascular health and its propensity for weight-reduction, here are several other benefits to pass along.

Tyrosine is also a precursor of melanin (the pigment responsible for skin and hair color) and aids in the functions of the thyroid and pituitary glands. Research suggests supplemental L-tyrosine may be helpful against chronic fatigue and narcolepsy. It's been used to help individuals suffering from anxiety, allergies and headaches.

Tryptophan, also found in good concentration in cheese, is used to produce serotonin, a necessary neurotransmitter. Serotonin is converted into the neurohormone melatonin, which is responsible for normal sleep. Tryptophan is also beneficial for migraine headaches and has shown considerable promise as an antidepressant. It helps combat insomnia, stabilize moods, control hyperactivity in children, and alleviate stress.

Tryptophan is also good for the heart, aids in weight control by reducing appetite, and enhances the release of growth hormones. Interestingly, the isolation of tryptophan was first detected through hydrolysis of casein, the primary protein found in dairy animal milk.

Taurine — I like to call it the heart-friendly nutrient — is also found in good concentration in cheese. In the strict sense, it isn't an amino acid, but it does function in a similar way. It reduces the risk of gallstones; it's a key component in bile, which is needed to digest and metabolize fats in the foods we eat, including those derived from the cheese itself. It aids the absorption of fat-soluble vitamins and is involved in the control of serum cholesterol levels. It may reduce blood pressure; in humans suffering essential hypertension, taurine supplementation results in measurable decreases in blood pressure. Evidence indicates taurine can be useful for treating atherosclerosis, edema, hypoglycemia, and other cardiovascular ailments. It has been shown to help congestive heart failure by increasing the force and effectiveness of heart-muscle contractions.

A 2003 study demonstrated dietary taurine's ability to lower blood chole-

sterol in young overweight adults. The study also reported a significant decrease in body weight. Taurine acts as an antioxidant, protecting against toxicity of various substances such as lead and cadmium. Additionally, taurine supplementation has been shown to prevent exercise-induced oxidative stress.

Taurine has also been shown to be effective in removing fatty liver deposits in rats, preventing liver disease and reducing cirrhosis in tested animals.

Taurine serves as a chaperone for the minerals in our systems; it's vital

for the proper utilization of sodium, potassium, zinc, magnesium and calcium, all of which affect brain metabolism. At the cellular level, taurine keeps potassium and magnesium inside while keeping excessive sodium out. It's necessary for normal skeletal muscle functioning and has been shown to play a role in sparing the loss of potassium from the heart muscle. It has a protective effect on the brain, particularly when the brain is dehydrated. It's used to alleviate uncontrollable facial twitches and the symptoms of alcohol withdrawal, anxiety, epilepsy and

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hyperactivity. In addition, taurine has been used in some clinics for breast cancer treatment.

In a recent ophthalmological discovery, taurine is also associated with zinc in maintaining eye function; zinc is found in cheese, especially the unpasteurized cow varieties. A deficiency of taurine and zinc may impair vision. There's one for your ophthalmologist.

You can tell your dermatologist cheese contains skin-cancer fighting CLA. You can also mention cosmetic compositions containing taurine have been introduced, possibly due to its antifibrotic properties. Taurine also helps to maintain skin hydration. In the past, I've suggested certain soft cheeses might work as good facial masks. That may, in fact, be so but I suspect it might be more effective to consume those cheeses.

The essential amino acid lysine is directly involved in collagen formation. Collagen, which is important for bones and connective tissues including skin, tendon and cartilage, helps keep skin supple and assists in the recovery from surgery and sports injuries. Nutritionists have used lysine to help prevent and treat conditions caused by herpes viruses, including cold sores, shingles and genital sores.

The protein-building lysine may also relieve migraine headaches and painful menstruation. It's important for proper growth and plays an essential role in the production of carnitine, a nutrient responsible for converting fatty acids into energy and helping to lower cholesterol levels. Lysine plays a major role in the body's production of hormones, enzymes and antibodies. Human studies have shown it can reduce anxiety. Promising evidence indicates lysine may be effective in treating cancer; when combined with phototherapy, it may cause cancer cells to kill themselves. Keep in mind the cancer-fighting CLA found in cheese.

Do I hear any complaints about bloodshot eyes, male pattern baldness, lack of concentration, irascibility, reproductive issues, tiredness? A deficiency of lysine can result in bloodshot eyes, hair loss, inability to concentrate, irritability, reproductive disorders, anemia and a lack of energy.

Lysine lowers high serum triglycerides, builds muscle protein, and helps recovery from surgery and sports injuries. It aids in the production of hormones and enzymes, tissue repair and the formation of collagen. Lysine improves the absorption of calcium from the digestive tract and prevents its loss in the urine. Some researchers speculate it may help prevent bone loss associated with osteoporosis.

other nutrients

Which brings us to calcium. There is no greater source of this all-important mineral than cheese. We know calcium is vital for the formation of strong bones and teeth and the maintenance of healthy gums. Long-term calcium deficiency can lead to rickets and osteoporosis with its increased risk of fractures.

Calcium is also important in maintaining a regular heart-beat and transmitting of nerve impulses. Calcium may help

lower cholesterol levels and alleviate cardiovascular disease. It's necessary for muscle growth and contraction, and for preventing muscle cramps. It's also essential in blood clotting and helps prevent cancer. It provides energy and participates in the protein structuring of RNA and DNA.

Contrary to what many think, high dietary calcium intake actually reduces the risk of kidney stones. In order to better absorb calcium, the body also needs vitamin D, which works like a pump to deliver calcium into the blood stream.

We have a vitamin D deficiency syndrome in this country. We avoid the sun because we fear the effects of harmful rays, thereby denying ourselves the most easily accessible source of vitamin D. If young, unpasteurized cheeses — especially young goat cheeses — were available, we could get a little extra vitamin D from them. They provide more vitamin D than aged cheeses, pasteurized cheeses or cheeses produced from other milk types.

Eastern European athletes incorporate cheese into their training diets and cosmonauts take cheese into space. I once received a call from NASA asking me what I knew about the Russians taking Parmigiano Reggiano into space with them. Along with enumerating the myriad of nutrients the cheese contains, I added that it is compact — thus helping to keep the weight load on the rocket down. I forgot to mention the weight-reducing effects that would help keep the weight of the astronauts down.

It would seem one could not help but lose weight with a diet that includes cheese, with the presence of the weight-reducing fatty-acid CLA, the opioid peptides (which help control our food intake), the tyrosine (which suppresses the appetite and reduces body fat), and the taurine (weight-reducing itself and needed for the metabolism of fat) and

tryptophan (appetite-reducing).

We're advised to avoid cheese on many occasions, such as when experiencing the common cold. Yet several of the nutrients — such as virus-fighting lysine — found in cheese may actually prevent or help alleviate the common cold.

Monolaurin, derived from the fatty-acid lauric acid found in milk, is known to decrease flu symptoms. It works by affecting the lipid membrane of flu viruses. It works directly on the envelope of the virus, disrupting its lipid bilayer and inactivating the virus by preventing attachment (absorption) to susceptible host cell walls. The membranes are needed for replication and infection. Monolaurin has also shown promise as an antifungal and antimicrobial agent.

Monolaurin was shown to remove all measurable infectivity of bronchitis, influenza, and herpes simplex 1 and 2, among others. It has been shown to be effective against candida fungal infections such as staph, strep, chlamydia, and giardia.

Niacin, a vitamin derived from the tryptophan in cheese, helps prevent canker sores.

Granted, not all these nutrients may be directly linked to the common cold (yet), but they at least appear to be associated with alleviating the symptoms, if not with the prevention



Max McCalman

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or cure of bacterial or viral diseases.

Some studies show heat treatment doesn't diminish the nutrients in milk; others clearly indicate some of the fat-soluble vitamins and beneficial fatty acids are significantly reduced, as are some of the water-soluble vitamins and some of the minerals. In addition to diminished aroma and flavor, the texture of a cheese produced from

heat-treated milk can become rubbery. This effect on texture occurs because the proteins are denatured; their secondary and tertiary structures are altered. Multiple studies have concluded most proteins lose their biological function when denatured.

You can benefit from having cheese before your meal, having cheese after your meal, or having cheese as your

meal. A little cheese before the meal can satisfy hunger and introduces enzymes to help metabolize the foods to come. A little cheese after the meal helps metabolize food, even if you've eaten a bit more than you should, foods you may have overindulged in because you didn't quite reach the nutritional satisfaction cheese deliciously provides. CC

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