

## THE CHEESE TRAP

Fugu, also known as the Japanese Puffer fish contains the neurotoxin *tetrodotoxin* which will paralyze the diaphragm, arrest your breathing and kill you. People still eat this fish however. For some, it's a delicacy. For others, it's a challenge. What may be stranger than playing Russian Roulette by consuming a poisonous fish however is consuming the breast milk of another animal after infancy. That is exactly what dairy, including cheese is! Breast milk. There is a saying that "He is a brave man who first dared to eat a raw oyster". Well, who is braver or stranger? Someone who ate a raw oyster or someone who took the breast milk of a lactating cow, pasteurized it to kill some bacteria, added back other bacteria and microbes to ferment it, then added enzymes from the fourth stomach of a calf (rennin) to coagulate it and then finally added other ingredients to preserve it and adjust its odor, flavor and even color? Sounds pretty crazy and gross. Cheeses like Muenster and Limberger contain *brevibacterium*, the same bacteria found on your unwashed feet that makes them smell like stinky feet! That fact alone should turn you off cheese.

There are 5 main problems with cheese with regards to it's extremely poor impact on health.

- 1) It concentrates calories. A cup of milk has 149 calories (70% of which comes from saturated fat) whereas a cup of cheddar has nearly 986, almost 7x more.
- 2) It concentrates dairy proteins, particularly casein. 1 cup of milk contains 7.7 grams of protein. A cup of cheddar has 57 grams of protein, the approximate amount the average person needs a day! In addition to having about 10% of the opioid activity on the brain as pure heroine, it triggers allergies and inflammation and it causes and worsens a variety of conditions including migraines, asthma, arthritis, rashes, cancer, diabetes and heart disease.
- 3) It concentrates cholesterol and saturated fat, both definitively shown to contribute to heart disease and dementia. 2 oz of cheddar has as much saturated fat (11 grams) as 8 slices of bacon or 6.5 eggs! That same amount of cheddar also contains 56 mg of cholesterol.
- 4) It is the highest source of salt in the American diet, much more than equal servings of snack foods including potato chips. Here is a comparison of 2 oz of the following:
  - a) Potato Chips - 330 mg of sodium
  - b) Cheddar - 350 mg of sodium
  - c) Feta - 520 mg of sodium
  - d) Velveeta - more than 800 mg!
- 5) Cheese concentrates naturally occurring hormones and various unnatural chemicals found in milk. The hormones, like estrogen and growth hormone are linked to various health issues including reproductive difficulties and hormonally driven cancers like breast and prostate. All the chemicals, like pesticides, herbicides and environmental pollutants are also concentrated in cheese.

There were no cheese factories in the US until 1851. In 1909, when the US Department of Agriculture started tracking eating habits, the average American ate 3.8 lbs of cheese. In 1935, the average amount consumed rose only to 5 lbs. Consumption rose slowly but in the 1960's, with the introduction and explosion of fast food, the rate of consumption started to rise dramatically. By 2013,

we were consuming 33 lbs and today, it's more than 35 lbs, per American, per year! That's over 60,000 calories!

The US is the #1 cheese producer worldwide followed by Germany and then France. France is the #1 exporter of cheese followed by Germany but the US doesn't even make the top 10. We are eating all of it!

## **MAKING CHEESE.**

9 million cows are producing milk on American farms at any time. The number is dropping but only because breeders and pharmaceutical companies are finding ways to push cows to produce more milk. Holsteines, the common black and white cow, produce more than 2800 gallons of milk per year. Other types of cows used include Jersey (light brown), Brown Swiss, Ayrshires, Guernseys and other, less productive cows whose milk is higher in fat and protein.

Milk does not stay fresh very long. Turning it into cheese preserves it and makes it more portable. During the process, it concentrates the fat, protein, calories, hormones and chemicals. Making cheese also eliminates its main sugar *lactose* which is why people with lactose intolerance are able to consume some cheeses without any issues. Actually, the ability to tolerate lactose is a mutation. So, in other words, the ability to consume dairy after infancy is a mutation. Lactose intolerance usually starts by 2 years of age, when most kids wean from breastfeeding.

It takes more than a gallon of milk to make a pound of cheddar cheese. Milk's components are variable from cow to cow and from batch to batch. In order to standardize the milk and make the fat and protein content more uniform, cream, skim milk and skim milk powder are added. To adjust cheese's color, additional beta carotene, a natural component of milk which gets diluted out, and annatto, a Latin American tree extract, are also added. Goats, sheep and buffalos do not secrete beta carotene like cows do so their cheese is naturally white. To make cow's milk mozzarella white, manufacturers add chemicals such as titanium dioxide and peroxides.

Cows essentially wade in their own feces, in extremely contaminated conditions and this contaminates the milk. To minimize the risk of passing this along to people, milk is pasteurized. To minimize bacterial contamination, another cruel procedure cows endure is depilation, removal of hairs on their udders. Manure, stuck to these hairs is felt to contribute to bacterial contamination so the hairs are removed, usually by using a blowtorch, often without anaesthesia! Imagine putting a flame to your nipples. Pasteurization is the process of heating milk, or other liquids, to kill bacteria. It kills most, but not all the microbes. Although this helps with preventing bacterial disease, the process of pasteurization also destroys many nutrients found in raw milk. It decreases vitamin E, B1, B2, B12 and folate levels. It destroys enzymes which we need for proper digestion including *phosphatase*, without which calcium you absorb from the milk can't get metabolized allowing it to remain in the bloodstream. Excess circulating calcium gets deposited into your arterial walls. This causes arterial stiffness and narrowing which causes blood pressure elevation, angina and heart failure.

Homogenization by the way is an entirely separate, mechanical process that occurs after pasteurization. The purpose of homogenization is to break down fat molecules in milk so that they resist separation. Without homogenization, fat molecules in milk form a layer of cream on the surface.

After unwanted bacteria are killed off with pasteurization, other bacteria are then added to the vats of milk to ferment the milk sugar *lactose* leading to the production of *lactic acid* which adds to the flavor of the cheese. Different kinds of bacteria as well as molds and yeasts provide unique flavors. *Brevibacteria* is a particularly stinky bacteria used to make such aromatic cheeses as Muenster and Limberger. It is actually very common on our skin and is the bacteria responsible for foot odor. *Staphylococcus Epidermidis*, another common human skin bacterium and the one responsible for body odor, is also used in some cheeses.

Various smelly compounds are produced during the cheese making process. *Butyric acid*, also produced in our stomachs when acids digest food, smells like vomit and *skatole*, a compound produced by the breakdown of milk fat, is also produced in the human intestines which is why some cheeses smell like feces.

The next step is to coagulate the fermenting fluid milk, turning it into solid curd. This is accomplished by adding *rennet* which contains the enzyme *rennin*, which breaks apart milk proteins and fats. Rennet is extracted from the lining of the inside of the fourth stomach of calves. How someone figured out to take calf stomach secretions and add it to fermenting milk is anyone's guess. Although some big cheese producers still use natural rennet, some now use a genetically engineered rennet. In 1990, the US FDA approved the process of adding enzyme-producing genes into bacteria and fungi producing this artificial rennet. Some soft cheeses, like cream cheese, are curdled by using citric acid or vinegar. It is also at this stage that salt is added to stop bacterial growth. Cheese is actually the highest source of salt in the American diet.

As an aside, human milk cannot be formed into cheese very well because it is much lower than cow's milk in the protein casein which helps in the coagulation process.

Rennet causes curds to form and the fluid, filled with whey protein (the second largest protein component of dairy) is drained off. Initially a throw-away garbage product, the dairy industry realized that they could purify the whey and sell it as a protein replacement for various industries like processed foods and bodybuilding.

The curds are then poured into forms. Round forms to produce a wheel and a rectangular one, forming a brick. These forms led to the various names for cheese like *formaggio* in Italian and *fromage* in French.

## **VARIETIES OF CHEESE.**

*Cottage cheese* and *cream cheese* are coagulated with acid (not rennet). They retain a little lactose sugar and are not aged so their flavors are milder.

*Ricotta* (Italian for "recooled") is made from whey protein not casein like most other cheeses.

*Feta* is made from sheep's milk or a combination of sheep and goat's milk. It's higher in fat, cholesterol and protein than cow's milk.

*Mozzarella* is traditionally made from buffalo's milk but in the US, it's made from cow's milk. As mentioned above, cow's milk contains beta carotene, giving it a faint orange color. To make cow's milk mozzarella white, manufacturers add chemicals such as titanium dioxide and peroxides. Because of its use on pizza, it is the most consumed cheese in America, *Cheddar* being second. Cheddar is the most popular cheese worldwide, outside of the US.

*Camembert* and *Brie*, from France, are made with bacteria, mold and yeast.

*Roquefort*, *Gorgonzola* and *Stilton* have mold introduced into their interiors. Roquefort is made from sheep's milk whereas gorgonzola and stilton are made from cow's milk.

*Emmental*, from Switzerland, is famous for its holes, created by CO<sub>2</sub> produced by bacterial cultures.

*American Process Cheese* was invented in 1926 by James L. Kraft, founder of Kraft Foods. He patented a method for blending old, unsold cheese with younger cheese and adding various ingredients to improve its flavor, color, texture and shelf-life. This "process" of cheese making give this cheese its name. Although this cheese is processed and most people call it "Processed Cheese", its name is actually Process Cheese.

*Velveeta* cheese was developed in 1918 by Swiss cheese maker Emil Frey who combined various left-over cheese products along with other ingredients. In 1923, the Velveeta Cheese Company was launched, later to be purchased by Kraft Foods. Today, Velveeta consists of milk, whey protein, milk fat, food starch, annatto (an orange-red dye obtained from the pulp of a tropical fruit, used for coloring foods and fabric) and apocarotenal (a carotenoid available in citrus fruits and some vegetables such as spinach which, like beta-carotene, transforms into Vitamin A in the human body) for color and some other proprietary ingredients.

### **How Cheese Keeps You Hooked.**

People rank the following foods as the most addictive:

#1 Pizza

#2 Chocolate

#3 Chips

#4 Cookies

#5 Ice Cream

Dairy is a significant component of 4 of the 5. Why is pizza #1? Salt, grease and opiates! The last one comes from casomorphins, the breakdown product of casein, the main protein in dairy, which has 10% of the activity of pure heroin on the brain. As far as salt is concerned, we do need some. About 1500 mg a day. We crave it and the tongue has is very sensitive to its taste. In addition our brain is very attune to it and it releases dopamine, the feel-good neurotransmitter, as a reward when we are exposed to it. That same response occurs with any survival (sex or food) or addictive stimulus (drugs, smoking, gambling, sex, eating...). As far as pizza is concerned, a 14 inch Domino's cheese pizza has 3,391 mg of sodium, about 400 mg a slice. Americans eat on average about 3,400 mg of sodium per day (almost one pizza), however the Dietary Guidelines for Americans recommends limiting sodium intake to less than 2,300 mg per day (as mentioned above, we really only need 1500 mg a day). That's equal to about 1 teaspoon of salt!

80% of the protein in milk is casein. 1 cup contains 7.7 grams of protein. Once made into cheddar cheese, the protein concentration rises 7 fold so that a cup of cheddar has 57 grams of protein, the approximate amount the average person needs a day! Casein again is similar to heroin with respect to its effect on the dopamine receptors in the brain (about 10% of its activity) so there is an addictive reward mechanism with dairy, especially cheese. The same thing happens with nicotine from tobacco products.

Human breast milk has much less casein than cow's milk but it does have some and it has a similar effect on the brain. It's felt to be responsible for the calming effect breastfeeding has on babies as well as on the mother since these proteins also enter her bloodstream. It's also felt to contribute to postpartum depression and even psychosis.

## **MILK AND HORMONES**

Hormones are natural chemical messengers which tell cells what to do. Examples are *Insulin*, made by the pancreas, which signals cells to take up sugar. Another is *adrenaline*, made by the adrenal glands, which stimulate the fight or flight response, increasing heart rate, dilating pupils and increasing blood pressure. Estrogens are female sex hormones responsible for breast development and monthly cyclical changes in the uterus and ovaries. There are three major endogenous types of estrogens in females that have estrogenic hormonal activity: estrone, estradiol, and estriol. Small, fluctuating amounts of these estrogens are normal but extra or excessive amounts are not. For example, women who take hormone replacement therapy after menopause (when the ovaries no longer make estrogen), have a 42% greater risk of developing breast cancer.

In 1956, estrogens were used to slow the growth of girls who were felt to be "growing too quickly". People had the crazy notion that if a girl was too tall, she would not attract a husband or be able to work as a flight attendant! They were injected with high doses of estrogen which did slow their growth but also caused a myriad of other unwanted side effects like: early puberty, weight gain, infertility, blood clots and hormone-related cancers like breast, ovarian and uterine cancer. Estrogens are normally produced in men as well but abnormal levels can also cause problems. Estradiol, the

main form of estrogen, in men is essential for modulating libido, erectile function, and spermatogenesis (sperm development and function). In the same way that excess estrogen in girls causes breast growth, a similar effect is seen in men who develop "man-boobs". Men can also get breast cancer (about 1% of breast cancers are in men). Cows milk is breast milk and as such contains varying amounts of estrogens. Depending on the stage of pregnancy or their cycle, the amount of estradiol, a form of estrogen, can vary up to 7x and estrone, another form, up to 45X!

Bovine Growth Hormone, also known as recombinant bovine somatotropin (rBST) is a genetically engineered product, launched by Monsanto in 1994, which not only causes cows and steer to grow faster and larger, it stimulates milk production in dairy cows. It basically keeps the milk-producing cells working continuously, rather than decreasing as would naturally occur during a unaltered cow's cycle. It also directs more nutrients towards milk production. One of its side effects is inflammation of cow udders, also called *mastitis*. Mastitis occurs 50% more frequently in cows treated with rBST. This leads to more antibiotic use to treat the mastitis (because God-forbid we should not use their milk while they are ill!). rSBG has been banned by many countries including Canada, the entire European Union (including France and Germany, the #2 and #3 cheese producers worldwide after the US), Australia, New Zealand, Japan and Israel. Not in the US however where it is still legal.

Studies clearly show elevated estrogen compound levels in people consuming even small amounts of dairy. The link between dairy consumption and breast cancer formation is not clear but there are numerous studies that show a link between consumption of dairy and increased risk of death from recurrence if you have already had breast cancer (49% higher with just 1 serving of high fat dairy a day). In addition, dairy consumption has been clearly linked to fertility problems and sperm health in men. Prostate cancer development and recurrence is also influenced by dairy consumption. Studies show a 34-60% increased risk of prostate cancer development with dairy consumption.

In addition, dairy contains high levels of *insulin-like growth factor 1* (IGF1), a known growth stimulant. It is meant to assist in growing a calf to a huge cow in a short period of time and does help grow muscles in bodybuilders. This uncontrolled growth is not good however if you have cancer as it also stimulates continued growth of cancer cells in humans.

**Calcium, vitamin D and cancer.** Vitamin D is produced on the skin after exposure to sunlight. It gets absorbed and then gets activated in the liver and kidneys into its active form. It's principal job is to assist in absorption of calcium from the diet. When calcium levels are low, the liver and kidneys activate more vitamin D. When there is enough or too much calcium, it decreases the activation. The problem arises when there is not enough vitamin D around because its second main function is to help protect us against cancer cell formation. If there is little vitamin D around, there is a greater chance of developing cancer. Calcium absorbed from dairy is poorly regulated as compared with calcium from plant sources. With high levels of calcium, the vitamin D conversion is shut off. The same does not occur with absorption of calcium from plants. Even though calcium is absorbed more efficiently from plants than from dairy (50% vs 30%), it is regulated and used more efficiently by the body.

Dairy, especially its concentrated form cheese, has been shown to cause or worsen many other conditions including:

- Asthma and other lung diseases.
- Ear infections in children. 80% of kids under 1 with ear infections had resolution after dairy was removed from their diet.
- Migraine headaches. 50% of adults and nearly 90% of kids with migraines had improvement or resolution of their migraines off dairy.
- Arthritis. Rheumatoid, Osteo and Psoriatic arthritis symptoms improve significantly off dairy.
- Tendonitis.
- Acne and Eczema.
- Type 1 Diabetes. Links between Juvenile Diabetes (now seen more and more commonly in adults in the form of LADA - Latent Autoimmune Diabetes of Adulthood) have been known since the 1970's.
- Type 2 Diabetes. The fat in dairy impact on insulin function, the root cause of T2D
- Environmental allergies.
- Almost 70% of the world's population becomes lactose intolerant, often starting by 2 years of age.
- Dairy allergy (to the proteins casein and whey mostly) impact on at least 10% of Americans.
- Maternal-Baby breastfeeding issues. In many cases, a "colicky" baby is simply reacting to the dairy protein mom is consuming, which does cross the barrier into mother's breast milk. The opioid effect from the casomorphins in dairy compounds mothers natural casomorphin production, worsening postpartum depression and even psychosis.