Home Basics Study Guide & Links

The sanitation study guide can be obtained on the website "Culinary Lessons" page
Username: Student Password: Culinary

Proper food temperatures for cooking are essential to avoiding illness.

http://cnnstudentnews.cnn.com/interactive/food/0005/temp.guide/content.html

Food Intoxication-

This type of illness is caused by toxins. Under favorable conditions certain bacteria produce chemical compounds called toxins, which, if ingested, cause food intoxication. Staphylococcus is the most commonly reported food intoxication.

http://www.tpub.com/mms/2.htm

A brief note about hand washing:

Importance of Hand Washing

Food production workers and foodservice personnel must be taught to use correct hand and fingertip washing, by management, in preparation for work. Regulatory authorities do not require the use of a fingernail brush. However, correct use of a fingernail brush to wash hands and fingertips is the best way to assure removal of transient microorganisms *(93)*.

Not only is hand washing critical in foodservice and food production operations, it is also important in homes and day care operations. Black et al. *(12)*, reported a study that demonstrated a decline in diarrhea illnesses (due to *Shigella*, *Giardia* and rotavirus) in day care centers when employees were taught to use good hand washing procedures. The incidence of diarrhea in 2 day care centers with a hand-washing program was half that of 2 control centers for an entire 35 week study period. Employees in the hand washing program washed their hands before handling food and after arriving at the day care center, helping a child use the toilet, or using the toilet themselves. When children entered the day care center, used the toilet, were diapered, or prepared to eat, employees washed their hands using bar soap and paper towels. However, the authors did not specify what constitutes a good hand-wash procedure.

Shigella is associated with poor hygiene. The effectiveness of the simple intervention of hand washing with soap and water in preventing the spread of shigellosis was investigated. Khan *(50)* demonstrated that secondary infection rates within families in Bangladesh due to transfer of pathogenic bacteria (*Shigella)* decreased, when people were taught to wash their hands after defecation and before eating. The study population was comprised of confirmed cases of shigellosis. These and matched controls were followed up for 10 days. Several pieces of soap and earthenware pitchers for storing water were provided to the study families and they were advised to wash their hands with soap and water after defecation and before meals. Compliance was monitored daily by observing the size of the soap and residual water. Rectal swabs of contact of both of the groups were obtained daily for culture. The secondary infection rate was 10.1% in the study group and 32.4% in the control group. The secondary case (symptomatic) rate was 2.2% in the study group and 14.2% in the control group. These results suggest that hand washing has a positive interrupting effect, even in unsanitary environments.

Sanitizing can be achieved in several different ways, read how:

http://nepmu6.med.navy.mil/EH/Hot%20Water%20Sanitizing.txt

HACCP

http://www.cfsan.fda.gov/~dms/fttmeat.html

http://vm.cfsan.fda.gov/~lrd/haccp.html

Common Contaminants in Food:

http://www.agen.ufl.edu/~foodsaf/co003.html

http://www.fightbac.org/10least.cfm

The Bad Bug Book

http://vm.cfsan.fda.gov/~mow/intro.html

Tips on Nutrition

Proteins:

http://nutrition.wustl.edu/protein.html

Proteins are the building blocks of our bodies. Present in all body tissues (such as muscles and skin), proteins make up the second largest portion of our body weight. Only water outweighs proteins, securing the top position of making up about 70% of our body weight.

[2] Proteins are like our bodies' superintendents with many responsibilities. They build and repair tissues, fight off infections, and transport oxygen. Together with carbohydrates and fats, proteins are also our bodies' energy source. Just like carbohydrates, proteins generate four calories per gram. Nevertheless, our bodies usually consider proteins the back-up energy providers. Therefore, unless we exclude both carbohydrates and fats from our diet, we don't rely on proteins to get us energized.

[3] Proteins are made up of amino acids. With twenty-two different types of amino acids in our bodies, nearly two-thirds (14) are non-essential and the remaining eight are essential. The term "non-essential amino acid" may lead you to believe that it is not important. This perception is incorrect. The fact is we need non-essential amino acids as much as we need essential amino acids in our bodies. So, what is the difference between non-essential amino acids and essential amino acids? "Source" is the answer. Our bodies manufacture non-essential amino acids. Yet, they cannot produce essential amino acids. For us to get essential amino acids, we must eat protein-rich foods, such as poultry and beans.

[4] After we eat, say, grilled salmon for dinner, our digestive systems break down proteins into amino acids. Once absorbed into bloodstreams and delivered to wherever they are needed, these amino acids recombine with other amino acids that already exist inside our bodies to become proteins again.

[5] Now, we know what roles proteins play in keeping us healthy and where we can obtain them. Is there anything else that we should know about proteins? Absolutely! We have yet to cover complete proteins and incomplete proteins. Complete proteins contain each of the eight essential amino acids. We can get complete proteins from milk, eggs, poultry, and fish. Incomplete proteins, on the contrary, lack at least one essential amino acid. Tofu, rice, and beans all have incomplete proteins. The absence of a certain type of essential amino acid from having, for example, rice can be supplemented by eating beans. Hence, if we are to center our diet on foods with incomplete proteins, we need to eat a variety of them to ensure that we have sufficient intakes of all eight amino acids.

If you would like to stretch your brain a bit try this:

http://www.nmathletictrainers.org/caloriecalculation.html

Natural Food Sources of Vitamins:

http://www.vitaminsdiary.com/vitamin-k-sources.htm

General Information about the Food Exchange List:

http://www.sonic.net/~lalovell/foodlist.html#TOP

Nutrition Information on Eggs:

- The nutrient composition of various egg products appears in Tables 1 and 2. These data are expressed on the basis of 100 grams. To convert values of liquid whole egg to the equivalent of one large egg, the data should be divided by 2 to equal 50 grams. For example, the cholesterol value of one large egg would be approximately 215 mg. This value is lower than that previously reported. Earlier data were less accurate because of less sophisticated analytical techniques and because the cholesterol content of the egg has been lowered through feeding practices and genetic selection.
- The egg is one of nature's most complete foods. It contains high quality protein with all of the essential amino acids, all of the vitamins except vitamin C, and many minerals.
- Egg products are particularly good for fortifying foods low in protein quality. Biologically, except for mother's milk, eggs provide the best protein naturally available. Egg protein is frequently used as a reference standard of 100 to compare the biological value of other proteins.
- One Large egg has approximately 5 grams of fat. Monounsaturated and polyunsaturated fatty acids account for about 69% of the total fatty acids found in eggs. Only 31% of the fatty acids are saturated. Thus, the egg is a good source of unsaturated fatty acids.

  The hen's diet can greatly influence the composition of the egg. For example, the level of unsaturated fatty acids in the egg can be changed. Feeding high levels of polyunsaturated fats will produce an egg high in polyunsaturated fats (omega-3 fatty acids). These fatty acids have been shown by some researchers to lower serum cholesterol. The vitamin content of the egg can also be markedly influenced by the diet of the hen. However, since hens today are fed a well balanced ration, there is little advantage in feeding higher levels of vitamins.

http://www.aeb.org/proc/egg_products.html

More Nutrition Facts on Butter and other things:

http://www.ext.vt.edu/pubs/nutrition/348-898/348-898.html#L7

Carbohydrates found in Milk:

http://classes.aces.uiuc.edu/AnSci308/milkcomp.html

Tips on Food Chemistry

For potato lovers: Check out the question/answer section (FAQ)

http://www.idahopotato.com/recipe_dig.php

http://sci-toys.com/ingredients/bha.html

http://www.recipezaar.com/library/getentry.zsp?recipe=57516&id=6

Q: How much egg white foam do you get when beaten? A: You get 6 to 8 times in volume if the egg whites have been at room temperature for 30 minutes before beating. FYI: Egg whites should be separated when cold and whipped when at room temperature. Egg whites will beat when cold, but it has to be done longer, while at room temperature they beat faster with a great increase in volume, giving a finer texture

http://www.baking911.com/howto/egg_whites_beat.htm

What's in your Cheese?

http://www.natural-connection.com/resource/tnc_reference_library/cheese.html

Tips on Baking

Short Pastry (Please excuse the Lard ingredient that they suggest as a substitute in this recipe)
http://www.dianasdesserts.com/index.cfm/fuseaction/recipes.recipeListing/filter/dianas/recipeID/48/Recipe.cfm

Making Sugar into candy, It's not that easy…

"Although there are many different types of sugar that you can use for baking," says Lisa Futterman, "plain old granulated sugar works best for most types of candy." Ms. Futterman is director of the Chopping Block Cooking School in Chicago.

Water and heat are the key to candy

But turning those tiny sugar granules into a creamy, chewy, or crunchy candy isn't as easy as it may seem. In fact, Futterman says it can be tricky. Even dangerous. "Cooking sugar to make candy requires an intense amount of heat," she says. Most recipes require temperatures of between 240 and 310 degrees F. To give you an idea of how hot that is, consider this: Water boils at 212 degrees F.

But let's back up. Making candy is tricky because you can't just cook sugar by putting it in a pot on the stove, says Darrin Aoyama. "Hot sugar is very difficult to control because it gets hot really fast," says the pastry chef at the River Oaks Country Club in Houston. He's also on the United States' 2004 Culinary Olympics Team that competes this October in Germany. To control the heating process, chefs mix the sugar with water. Water helps slow down the temperature changes in the sugar.

That's because water never gets hotter than 212 degrees F. At that temperature, it starts to boil and then to evaporate. When you heat sugar and water to 212 degrees, the water in the solution will cause it to boil. As the water boils away, the sugar and water solution gets hotter. In fact, the temperature of the solution tells you what percentage of water is left.

Different types of candy require different concentrations of sugar. This is called "saturation." When a solution is "saturated," it holds as much sugar as it can at a certain temperature - no more sugar will dissolve in it. In fact, to make many types of candy, there must be so much sugar in the water that it isn't just saturated, it's "supersaturated."

Here's where you have to be extra careful when cooking: The more concentrated the sugar solution, the less stable are the sugar molecules. Adding just a speck of dust, or changing the

temperature ever so slightly can cause the solution to crystallize early. At lightning speed, your smooth syrup will turn into a grainy glop.

The cold water candy test

It is also important that you carefully watch to see how hot this solution gets. That's because how hot it gets determines what kind of candy you make. "The temperature of sugar solutions jumps quickly," Futterman says, "so you have to watch it very closely." It's critical to use a candy thermometer as your guide, but "it's also cool to do the 'cold water candy test'."

Here's how it works: Say you are making fudge. Most fudge recipes direct you to heat your sugar solution to about 235 degrees F. on a candy thermometer. (Make sure that when you're reading the thermometer it's not touching the bottom of the pot, Futterman says, or you could get an inaccurate reading.)

To check this temperature with the cold water candy test, carefully skim a spoonful of the solution from the pot and pour it into a glass of cold water. Watch closely: If it is the right temperature, you will see the solution form a ball in the water. This is the "soft ball stage." That means that, once it's cooled for a few minutes, you can take the ball out of the water and it will feel soft. In fact, you can even smoosh it between your fingers - just like fudge.

If the solution gets hotter, between 245 and 250 degrees F., you've reached the "firm ball stage," which is perfect for making caramels. To test it, you do the same thing with the solution and the cold water. This time, though, the solution should form a ball that is, as it sounds, a bit firmer than the soft ball. You will still be able to squash it, but it won't be as easy.

The "hard ball stage" happens when the solution is 250 to 265 degrees F. At this point, the solution is about 92 percent sugar and only 8 percent water. When you put a bit of the solution in cold water now, it will form a ball that feels firm, like a gummy bear. This is the temperature for making divinity and nougat candies.

99 percent sugar is 'lollipop time'

When the solution gets even hotter - 270 to 290 degrees F. - it is at the "soft crack stage." This is perfect for saltwater taffy and butterscotch. When you drop some of the solution into cold water, you'll see threads forming, rather than a ball. If you take the threads out of the water, they can bend a bit before they break.

At 300 to 310 degrees F., the solution is 99 percent sugar and is as hot as it can be without burning. This is the "hard crack stage," and it's the temperature range for making lollipops and peanut brittle. When a bit of this super hot solution is added to cold water, it forms threads that break if you try to bend them.

You can tell your solution is getting hotter as you cook it because, as it continues to boil, the bubbles won't be as rapid. "It will go from a rapid boil to a boil that looks more like lava," Mr. Aoyama says. If your solution gets too hot - hotter than 310 degrees F. - it will start to turn brown. Candy made with this brown solution will have a bitter taste, like strong caramel. The taste will overpower any flavorings you add. If your solution gets any hotter than that, it will start to burn. You'll know if this happens because it will start to smoke and will smell really bad.

The easiest way to ensure delicious candy every time, Futterman says, is to follow the recipe exactly - and have fun.

• *For more on the science of sugar, go to:* www.exploratorium.edu/cooking/candy

Choosing the right flour for baking…

http://www.taunton.com/finecooking/pages/c00003.asp

http://www.texascooking.com/features/aug2004sourdoughbaking.htm

http://worldsfinestchocolate.com/aspx/gContent.aspx?ContentKey=FACTS

The Jerusalem artichoke is a tuber that grows underground like the potato but is harder to harvest because the tubers cling to the roots and become entwined. Cultivated varieties of sunchokes grow in clumps close to the main root or rhizome while wild ones grow at the end of root. Like their family members of sunflowers, they can grow from 3 to 12 feet high with large leaves and flowers that are 1 1/2 to 3 inches in diameter. They grow well in almost all soil with the exception of very heavy clay soil, but do best in alkaline soil.

Food Identification

http://www.vegparadise.com/highestperch26.html

http://www.tropical.orcon.net.nz/Cherimoya.html

http://www.shellfishnw.com/html/geoducks.htm