



September 2006

## Food Facts For You!

Barbara Ingham, Extension Food Scientist  
Department of Food Science, 1605 Linden Drive, Madison, WI 53706-1565

**A New Look for Wisconsin FIRST!; Food Preservation Tips and Updates; Listeriosis During Pregnancy: New Research on a Deadly Disease; Health Alert: Fully Cook Frozen Entrees; Essential Food Safety Behaviors for Older Adults; Let's Get Cooking 2006 Evaluation Results; What's On Your Mind? (storing fruits and vegetables at home, calibrating dial-stem thermometers, recipe calculator, Barb's sabbatical leave, What was that again?).**

### **A New Look for Wisconsin FIRST!**

In finding this newsletter, you will have noticed a new look for the Wisconsin FIRST web site: [www.wisc.edu/foodsafety](http://www.wisc.edu/foodsafety). The FIRST web site is dedicated to sharing information on food safety and quality of interest to educators and those in the food industry. Justin Kral, B.S. UW-Madison 2005, has worked diligently this summer to redesign the web-based information that food science specialists share with individuals around Wisconsin and across the nation. Of particular interest, you will find a revised section on home food preservation, a new look to the Food Facts pages with expanded archives and enhanced searching capability, and a section with materials for teaching food safety. As the fall unfolds, we will be asking some of you to give us your input on this new design. If you would like to volunteer to help, please let me know!

### **Food Preservation Tips and Updates**

*I wish to thank those of you who hosted food preservation trainings this summer. Sixty individuals completed a rigorous program which included a pre-test, daily homework, hands-on laboratories, and a final exam. Individuals who successfully completed the training were certified as **Master Food Preservers and Food Safety Volunteers**. The discussions and questions this year were certainly the most interesting ever. ☺*

**Add Acid to Canned Tomatoes.** It goes without saying, but I am going to say it anyway: *Remember to add acid to canned tomatoes products to ensure safety!* To ensure safe acidity in whole, crushed, or juiced tomatoes, add **two tablespoons of bottled lemon juice** or **1/2 teaspoon of citric acid** per quart of tomatoes. For pints, use one tablespoon bottled lemon juice or 1/4 teaspoon citric acid. Acid can be added directly to the jars before filling with product. Add sugar to offset acid taste, if desired. Or, use four tablespoons of **5%-acidity vinegar** per quart instead of lemon juice or citric acid. However, vinegar may cause undesirable flavor changes. Acid is added to canned tomatoes whether the tomatoes are canned in a pressure canner or a boiling water canner. Use of a pressure canner will result in higher quality and more nutritious canned tomato products. Select only disease-free, preferably vine-ripened, firm fruit for canning. Do not can tomatoes from dead or frost-killed vines. Green tomatoes are more acidic than ripened fruit and can be canned safely with any of the recipes approved for ripe tomatoes; or try a green tomato relish or salsa recipe.

**Reprocess Jars that Fail to Seal within 24 Hours.** Sometimes, despite your best efforts, jars of food that have come out of a canner fail to seal. There are many reasons for this: lids not properly pre-treated, insufficient headspace, temperature fluctuations during canning, and so forth. When these jars are set aside to cool, they fail to develop a vacuum seal. Jars that are not sealed can spoil or become unsafe. Any jar can be reprocessed **within 24 hours** of the initial processing. To reprocess canned food, remove the lid and check the jar-sealing surface for tiny nicks or cracks. [If necessary, choose a new jar for reprocessing.] Clean the jar in hot, soapy water and keep warm until refilled. Pretreat new lids and pack room temperature or hot food into jars; fill with warm liquid, leaving the appropriate headspace. Remove bubbles and seal jars. **Reprocess using the appropriate processing time.** Unsealed jars may also be placed in the **refrigerator** and used promptly, or adjust the headspace in unsealed jars to 1-½ inches and freeze.

**Pressure Cookers: not the Same as Pressure Canners. Pressure cookers, also known as pressure saucepans,** are used to rapidly cook meats, vegetables and other foods for a family meal. **Pressure canners** are necessary to safely can foods such as meats and vegetables that are low in acid. Pressure canners may be fitted with either a weighted gauge or a dial gauge.

Most **pressure canners** are designed to hold up 7 quart jars or 8-9 pints, although some may hold up to 18 pints in 2 layers, and are able to process food at pressures up to 25 pounds. Regardless of the volume, pressure canners must be used properly to ensure safe home-canned food. Some popular brands of pressure canners are Mirro®, Presto®, and All American®.

**Pressure saucepans** come in a variety of sizes, and may, or may not, have a way to regulate the pressure. Some pressure saucepans come equipped with a weight to cook at 5, 10 or 15 pounds of pressure, while others have no way to regulate pressure settings, or simply have settings of 'low', 'medium' and 'high'. Pressure saucepans **are not recommended for home canning** – these vessels may not maintain adequate pressure, and they heat and cool too quickly to adequately process food. Newer **electric pressure cookers** are also not safe for canning.

Both pressure canners and pressure saucepans work by trapping steam and building up pressure inside a pot. The steam is trapped because the lid, which is fitted with a rubber gasket, forms an airtight seal once it's locked into position. As the contents of the pot heat up, steam gets trapped and pressure builds. At 15 pounds pressure, water boils at 250°F, almost 40°F higher than in conventional pots. The high pressure and temperature destroy microorganisms more rapidly (pressure canning) or cook foods more quickly (pressure cooking).

**Perfecting ClearJel®.** Again this summer, some canned pie filling 'erupted' out of the jars at the end of processing. Here are some hints from Dr. Elizabeth Andress (National Center for Home Food Preservation) on perfecting ClearJel®. Following the recipe should result in a safe, high quality product and not one that over-flows the jars, so if you, or your learners, ever 'suffer' from over-flowing jars, here are some tips:

- Slice fruit into thin slices, no more than ½" thick.
- Blanch fruit as directed, working in small batches. Blanching stabilizes the product and also helps to remove air trapped in fruit cells.

- Cook the sugar and Clearjel® mixture as directed working in a large kettle. The mixture needs to come rapidly to temperature and to maintain heat even when the apple slices are added. Working in a too-small kettle will prevent the product from cooking properly – somewhat like too much product hinders jam and jelly making.
- Don't increase headspace to try and prevent product over-flow; it won't work.
- Air trapped in the fruit tissue may be a prime 'suspect' in product over-flow. As the air expands and leaves the cells and the jar, it carries product along with it. Effective blanching and using thin fruit slices may help release trapped air.
- If you have tried everything to no avail, try switching fruit varieties. Many things can influence the success of the product, including variety, growing conditions, length of storage, and so forth.

**Sensational Salsas.** When the bounty of your harvest indicates it's time to make salsa, here are some resources to turn to: **Canning Salsa Safely** (B3570-UWEX), or **Sensational Salsas** [http://www.uga.edu/nchfp/publications/uga/sensational\\_salsa.pdf](http://www.uga.edu/nchfp/publications/uga/sensational_salsa.pdf) from the University of Georgia. The publication from Georgia contains some newer recipes that have been translated into **Spanish**: *Spicy Jicama Salsa*, *Mango Salsa*, *Peach Apple Salsa*, and *Spicy Cranberry Salsa* <http://www.uga.edu/nchfp/publications/nchfp/factsheets.html>. Remember to always follow a research-tested recipe for canning salsa or any other home-canned food!

### **Listeriosis During Pregnancy: New Research on a Deadly Disease**

For years, doctors have puzzled over why pregnant women are 20 times more likely than others to be infected by the bacterium *Listeria monocytogenes*. Researchers at the University of California, Berkeley, now think they have the answer, and it isn't pretty. Their research, conducted in guinea pigs, shows that the bacteria can invade the placenta, where - protected from the body's immune system - they proliferate rapidly before pouring out to infect organs such as the liver and spleen. The illness they cause often results in miscarriage or infection of the fetus.

The study is the first to trace such a pathway of infection, and it dashes the widely-held assumption that immune-system changes during pregnancy are to blame for elevated Listeria-infection rates. "The reason the mother is more susceptible is not necessarily because her immune system is compromised, but because the bacteria that got into her placenta are infecting her," said Anna Bakardjiev, the study's lead author and a postdoctoral researcher with Daniel Portnoy, professor of biochemistry and molecular biology at UC Berkeley. "The miscarriages that result from these infections may be a natural defense mechanism to dispel this source of infection. It's rare for a pregnant woman to get infected, but once she is, she can't clear the infection unless the placenta is expelled."

Listeriosis is a foodborne illness caused by *Listeria monocytogenes*. Every year in the United States, about 2,500 people fall seriously ill with the disease. About one in three cases occur in pregnant women, and about one in five of all cases results in death, according to the Centers for Disease Control and Prevention (CDC). Apart from pregnant women, the illness primarily affects infants and people with compromised immune systems. Fever, muscle aches and sometimes gastrointestinal problems are among listeriosis's most common symptoms. While a pregnant woman's symptoms are often mild, the illness often causes miscarriage, stillbirth or premature delivery of the

fetus. Babies that are born to infected mothers are often themselves infected, and many die. Following are some questions (and answers) about this deadly disease.

**If I am pregnant, how will I know if I have listeriosis?** Because the illness could take weeks to show up, you may not know you have it. Early signs may include fever, chills, muscle aches, diarrhea, and upset stomach. At first, you may feel as if you have the flu. Later on, you could have a stiff neck, headache, convulsions, or lose your balance.

**What should I do if I think I have listeriosis?** Call your doctor, nurse, or health clinic if you have any of the signs. If you have listeriosis, your doctor can treat you.

**How do I keep myself and my baby safe from listeriosis?**

- Do not eat hot dogs, luncheon meats, bologna, or other deli meats unless they are reheated until steaming hot. All these foods should reach 160°F. Hot dogs are most effectively heated by boiling in water on the stove.
- Do not eat refrigerated pâté, meat spreads from a meat counter, or smoked seafood found in the refrigerated section of the store. Foods that don't need refrigeration, like canned tuna and canned salmon, are okay to eat. Refrigerate after opening.
- Do not drink raw (unpasteurized) milk and do not eat foods, like some cheeses, that have unpasteurized milk in them.
- Do not eat salads made in the store such as ham salad, chicken salad, egg salad, tuna salad, or seafood salad.
- Do not eat soft cheese such as Feta, Mexican-style cheeses such as queso blanco, queso fresco, queso de hoja, queso de crema and asadero, Brie, Camembert cheeses, blue-veined cheeses, and Panela unless it is labeled as made with pasteurized milk. Make sure the label says, "MADE WITH PASTEURIZED MILK."
- Fully cook all meats, poultry, and fish before eating. Look for the juices of meats and poultry to run clear, but use a meat thermometer to make sure. Fish should flake easily with a fork when it is thoroughly cooked. Skip medium or rare burgers and sausages. Be careful with hot dogs and deli meats, too.

**What can I do to keep my food safe?** Here are some tips for keeping you and your family safe:

- **Set your refrigerator temperature to 32° to 40°F.** *Listeria* is an unusual bacterium because it can actually grow at cold temperatures. To slow the growth of any harmful bacteria that might be in food, set your refrigerator at 40 °F or lower, and the freezer 0 °F or lower. Use a refrigerator thermometer to check your refrigerator's inside temperature.
- **Clean up all spills in your refrigerator right away**—especially juices from hot dog packages or raw meat or chicken/turkey. Clean the inside walls and shelves of your refrigerator with hot water and liquid soap, then rinse.
- **Use precooked or ready-to-eat food as soon as you can.** Don't store it in the refrigerator too long.
- **Wash your hands** after you touch hot dogs, raw meat, chicken, turkey, or seafood or their juices.

**Other foods that may be of concern during pregnancy.** Seafood can be a great source of protein and iron, and the omega-3 fatty acids in many fish can help promote your baby's brain development. However, some fish and shellfish contain potentially dangerous levels of **mercury**. Too much mercury may damage your baby's developing

nervous system. The bigger and older the fish, the more mercury it may contain. Pregnant women should avoid eating: swordfish, shark, king mackerel and tilefish. Some types of seafood contain little mercury and according to the most recent guidelines from the Food and Drug Administration (FDA), you can safely eat up to 12 ounces a week (two average meals) of: shrimp, canned light tuna (limit albacore tuna and tuna steak to no more than 6 ounces a week.), salmon, pollock, and catfish.

To avoid ingesting harmful bacteria or viruses, **avoid raw fish and shellfish** — especially oysters and clams — and anything caught in polluted water. Refrigerated smoked seafood is also off limits, unless it's an ingredient in a casserole or other cooked dish.

### **Health Alert: Fully Cook Frozen Entrees**

The U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS), in collaboration with the Minnesota Departments of Health and Agriculture, has recently investigated cases of salmonellosis associated with a class of frozen entrees that contain raw chicken. These frozen, breaded, boneless chicken products (some may be stuffed or filled and appear browned) are raw and must be cooked to a safe minimum internal temperature of 165° F. Using a food thermometer is the only sure way of knowing food has reached a high enough temperature to destroy foodborne bacteria.

In addition to illnesses in Minnesota, there are at least 34 cases of salmonellosis across the U.S. connected to consumption of uncooked chicken entrees. The entrees come in many varieties, such as Chicken Cordon Bleu, Chicken Kiev, and Chicken with Mushrooms and Wine Sauce. Because these products are often filled with additional ingredients, they may also take longer to reach a safe minimum internal temperature of 165° F than chicken breasts that do not contain fillings. FSIS believes that in some cases, consumers may not realize that the breading on these products has only been pre-browned and that these frozen entrees contain raw chicken. FSIS is also concerned that consumers may not be following cooking instructions or that because of the variability of microwave ovens, the instructions may not yield a product that reaches a safe minimum internal temperature of 165° F.

Consumers with questions about the safety of this or any other food product can consult **Ask Karen**, the FSIS virtual representative available 24 hours a day at [http://www.fsis.usda.gov/Food\\_Safety\\_Education/Ask\\_Karen/index.asp#Question](http://www.fsis.usda.gov/Food_Safety_Education/Ask_Karen/index.asp#Question). The toll-free USDA Meat and Poultry Hotline 1-888-MPHotline (1-888-674-6854) is available in English and Spanish and can be reached from 10 a.m. to 4 p.m. (Eastern Time) Monday through Friday. Recorded food safety messages are available 24 hours a day.

### **Essential Food Safety Behaviors for Older Adults**

Researchers from Ohio State University led a team that reviewed the issues that older adults face in relation to foodborne diseases. Their research is summarized below.

Adults over 60 may be at enhanced risk for foodborne illnesses because of normal changes of aging as well as morbidities that affect susceptibility to infection, including foodborne pathogens. The pathogens of greatest concern (*Listeria monocytogenes*, *Salmonella* species, *E. coli* O157, *Campylobacter jejuni*) can be destroyed by heat, so it is critical that foods are cooked to safe temperatures. Dr. Lydia Medeiros collaborated with colleagues at Ohio State University, as well as researchers at Washington State University and Colorado State University to investigate factors that may influence whether food is cooked adequately by adults 60 years of age and older. A survey

instrument was developed and complete data was collected from 239 participants at 21 congregate meal sites in the Columbus, Ohio metropolitan area. Despite positive attitudes toward safe-food handling, the mean knowledge score related to adequate cooking methods was relatively low (48.6% correct). Almost none (4%) of the participants reported that they ate rare hamburger, and only 35% ate under-cooked eggs; however use of a food thermometer was very rare.

In a follow-up study, participants were included in an educational intervention project which measured food safety attitudes, knowledge and behavior, followed by a series of three 30-minute food safety education lessons. Lessons were designed to gauge participant stage of change for thermometer use, and also involved goal setting and discussion of barriers to thermometer use. Based on responses to the stage-of-readiness-to-use-a-food-thermometer question, the majority of participants (66.9%) were in the Do Not Plan [to use a thermometer] group. The number of participants in the Plan to Use group was lower at 18%, as was the Have Used [a food thermometer] group at 15%. Of the 145 seniors who completed all three food safety education lessons, scores for adequate cooking knowledge, food safety attitude and cooking behavior were significantly higher. Participants were also more likely to 'have used' (29%) or 'plan to use' (45.5%) [a food thermometer] after the lessons. Barriers to food thermometer use that were identified by participants included: participants no longer cook large meals and saw no need to use a thermometer, participants were not able to easily read the numbers on the thermometer, forgetfulness, and procrastination.

*Essential Food Safety Behaviors for Older Adults. 2006. L.C. Medeiros, et al. Food Protection Trends Vol. 26, p. 586-592.*

### **Let's Get Cooking 2006 Evaluation Results**

Educators in 9 counties (Ashland, Waukesha, Washington, Portage, Grant, Iowa, Rock, Kewaunee, and Burnett) evaluated the effectiveness of the educational program *Let's Get Cooking* in increasing learner knowledge and improving behavior of adults when cooking high-risk foods. Learners (n=260) ranged from library staff to meal site participants, from residents at an abuse shelter to head start parents. Educators first shared statements with learners that described cooking patterns for various high-risk foods: meat, poultry, fish, and egg dishes. Learners tested their knowledge in a bingo-style game as they responded to whether the food was cooked in a way that it was safe to eat.

Educators then asked learners to describe their own cooking habits and whether or not they used a thermometer when cooking to ensure that foods were cooked to safe temperatures. 48% of learners (primarily head start and even-start parents) did not, at the time, own a food thermometer, putting these learners at risk for foodborne illness when preparing high-risk foods such as meat, poultry, fish and eggs.

Educators next distributed instant-read dial-stem meat thermometers to all learners. As a result of the lesson, 94% of learners correctly identified how to place an instant-read dial stem meat thermometer in a hamburger to accurately measure temperature. Learners also responded to a post/pre test that self-reported thermometer use behavior before and after the lesson. Learners self-reported that, as a result of the lesson and receiving the thermometer, they were significantly more likely to use a thermometer to check the temperature of high-risk foods (average increase 45%). The greatest anticipated change in thermometer use is in the category of checking the temperature of hard-to-test foods

such as chicken breasts and pork chops. Results of this evaluation project are shown in the table below.

Results of FY06 Evaluation Project to Determine Effectiveness of Teaching to Cook Foods to Proper Temperatures

FOOD ITEM	Almost Always* (%)	
	BEFORE	AFTER
Beef roast	20	67
Chicken (whole)	20	67
Hamburger patties	5	50
Egg dishes	4	36
Pork chops	11	61
Fish	6	45
Steak	6	50
Turkey (whole)	32	76
Chicken breasts	10	62

\*Average percentage of learners responding 'Almost always' to thermometer use Before or After a lesson on cooking foods to proper temperatures.

Comments from participant reflected their new-found knowledge:

- Use thermometer for ALL meats
- Meat temperatures are important!
- You can't rely on a turkey's pop-up timer to know that it is done.
- It's important to cook foods to proper temperatures
- I should go by temperature, not time, when I am cooking meat.
- You really should check all food temperatures.
- Leftovers need to be heated to bubbling hot.
- Temperature is more important than I thought.
- Just because meat is brown in the center doesn't mean it's heated to a safe temperature.

### What's On Your Mind?

**Storing fruits and vegetables at home.** After a warm summer (ok, ok – it was HOT), many consumers will find gardens with ample amounts of produce that needs to be stored for a few days or a few months. Tips on storing fruits and vegetables for best quality can be found in the new UW-Extension publication **Storing Fruits and Vegetables at Home (A3823)**. Lead authors Teryl Roper and Karen Delahaut (Horticulture) have released this publication just in time for harvest season! Another excellent resource is Washington State University's **Storing Vegetables and Fruits at Home EB1326** <http://cru.cahe.wsu.edu/CEPublications/eb1326/eb1326.pdf> This publication is recommended for the information on design of storage rooms that will maintain quality of some crops (potatoes, onions, winter squash, and so forth) for many months after harvest.

**Dial-stem thermometer calibration.** Mary Jo Liesch (Brown County) found that the dial-stem thermometer that she had received from me was out of calibration. I contacted the company, and here are the instructions for calibrating the newer dial-stem thermometers marked with University of Wisconsin Extension on the white plastic sleeve.

**On the underside of our thermometer head are two adjusting lugs - look at the temperature reading now and write it down. Take the thermometer head in one**

hand. With the other hand push the white plastic sleeve tight against the thermometer head. By turning the sleeve, the top of the metal pocket clip catches the adjusting lug and moves the pointer. (clockwise the pointer moves up)

Calibration should be done with melting ice for a reading of 32°-33° F, while boiling water is 212° F.

Thanks Mary Jo for asking about this!

**Handy on-line recipe calculator.** Have you ever struggled with the calculations for ingredient amounts when you want to double a recipe, or how about if you want to prepare 1 ½ times the amount? **Faye Malek** (Manitowoc County) found a handy online recipe calculator that allows you to input the recipe ingredients and the computer will do that math for you <http://www.fruitfromwashington.com/Recipes/scale/recipeconversions.php>  
Thanks to Faye for sharing this tip.

**Barb's sabbatical leave** (Sept 06 – Feb 07). I have been granted sabbatical leave from September 2006 through February 2007. This time has been given as I work to prepare a new course that I am required to teach in the Food Science department. During this time, I will be available, but my time will be directed primarily to preparation of teaching and assessment materials. Please plan on contacting me primarily by email – I will be checking email at least once each day and I will endeavor to get back to you as soon as possible with answers to your questions. Thank you, as always for your support of me and the work that I do. [If you are in urgently in need of information, check out the Food Facts archives page (newly designed). We have endeavored to update these web materials to more effectively support you while I am away.]

**What was that again?** .Every once in a while you read a newspaper article that causes you to stop and reflect. Consider this from the August 3<sup>rd</sup> edition of the *Jackson (TN) Sun*:

**Titans: Flu bug slows down about 20 at training camp**  
CLARKSVILLE -- Tennessee Titans players and personnel continue to battle a 24-hour flu bug for the fifth consecutive day at their training camp at Austin Peay State University. The virus has hit about 20 players, general manager Floyd Reese, as well as some assistant coaches, scouts and various personnel. A couple of media members have also fallen ill.

→A 24-hour 'flu' bug that lasts for 5 days - isn't that a 120-hour bug?????

---

Dr. Barbara Ingham

Phone: 608-263-7383

Fax: 608-262-6872

[bingham@wisc.edu](mailto:bingham@wisc.edu)

Wisconsin FIRST: <http://www.wisc.edu/foodsafety/>

---