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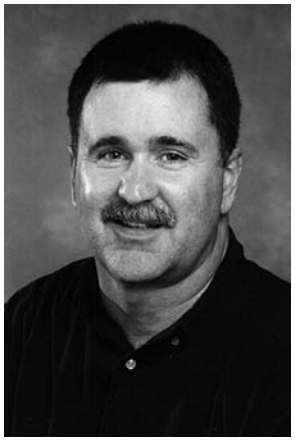
Avoiding Antibiotic Resistance in Turkeys: Use Bacteriocins Instead to Kill Pathogen

A University of Arkansas-led research team has found that an effective way to get rid of pathogenic *Campylobcter* bacteria in turkeys is to use proteins produced naturally by other bacteria. The proteins are called bacteriocins. The researchers found that these proteins can eliminate the detectable *Campylobacter* and that they can also change conditions in the gut so that the pathogen has fewer places to hide and develop.

"If we can eliminate *Campylobacter*, we don't have to worry about antibiotic resistance," said Dan Donoghue, a UA Division of Agriculture poultry science researcher who led the project funded by the Food Safety Consortium. The UA group worked with USDA Agricultural Research Service scientists led by Annie Donoghue in Fayetteville, Ark., and Norm Stern in Athens, Ga., along with several Russian government microbiologists.

Campylobacter, which is one of the leading bacterial causes of foodborne illness, has often been the target of antibiotic treatment in poultry. But that approach has its disadvantages. Donoghue explained that the concern is that the *Campylobacter* in poultry will become resistant to the antibiotics, and that will lead to human consumers becoming sick.



Dan Donoghue

Antibiotics, however, serve useful purposes to prevent disease or to treat sick birds. So the solution is to eliminate the *Campylobacter* through other means — in this case, bacteriocins — and then that also eliminates the problems in using antibiotics in poultry for other purposes.

"If there isn't any *Campylobacter* in poultry, then it can't become drug resistant," Donoghue said. "The use of bacteriocins may allow antibiotics treatment of sick birds without the consequence of antibiotic-resistant *Campylobacter*."

Although bacteriocins are effective at eliminating detectable levels of

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Proper Packaging and Carbon Dioxide Keeps the Color, Protects the Meat

Processors who package meat want it to be free of pathogens and to have an attractive color in the display case. Use of the right elements for packaging can assist processors in reaching that goal with some research findings by a Food Safety Consortium team at Iowa State University.

The group, led by animal science and food science professor Joseph Sebranek, started with pork products in modified atmosphere packaging, which changes the composition of the air within the film-covered package. The researchers sought to determine if inhibitory improvement against pathogens might be achieved by packaging for pork loins and boneless ham muscles that were injected with potassium lactate and sodium diacetate.

> *'There is still merit to the idea of using high carbon dioxide in modified atmosphere packaging.'*

Lactate and diacetate are already being used to reduce microbial growth. Scientists developed a hypothesis that a modified atmosphere of 99.5 percent carbon dioxide and 0.5 percent carbon monoxide would make the antimicrobials more effective.

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Avoiding Antibiotic Resistance…
continued

Campylobacter, that leads to the question of what about undetectable levels of the pathogen that might still be in the bird's system. Donoghue noted that any possible remaining numbers of the pathogen can recolonize inside the bird within a few days. But if the birds are administered doses of bacteriocins just before processing, then the potential problem goes away.

"By the time the bird would get to the consumer, those numbers of *Campylobacter* — if they do exist — would be at such a low level that they wouldn't pose a risk to human health," Donoghue said.

> *'The use of bacteriocins may allow antibiotics treatment of sick birds without the consequence of antibiotic-resistant* Campylobacter.*'*

Donoghue's project is also exploring the effects that bacteriocins have on the bird's guts. The bacteriocins, after three days of doses, appear to reduce the size of the bird's crypts (narrow but deep pockets in the intestinal wall), which is where *Campylobacter* is sequestered.

"It is possible the smaller crypt size and subsequent greater exposure to the intestinal lumen (cavity area) may change the nutrient or chemical environment limiting *Campylobacter* growth and colonization," Donoghue said.

The bacteriocins also appear to reduce the number of goblet cells in a bird's intestines. The goblet cells excrete mucin, a glycoprotein that serves as an energy source for *Campylobacter*.

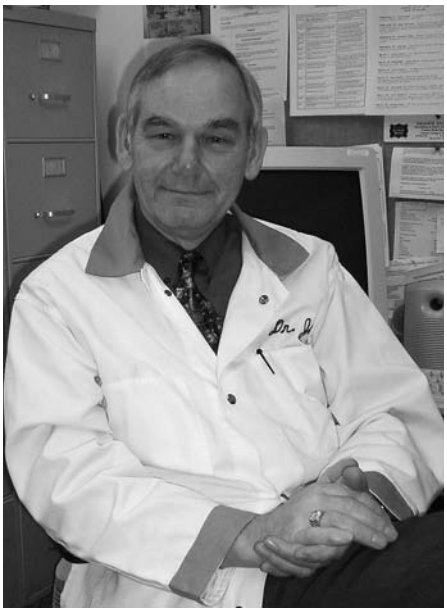
"Since there are fewer goblet cells, that may mean there are less available nutrients to support *Campylobacter* growth" Donoghue said. ■

Proper Packaging…
continued

Sebranek said the research showed that the high carbon dioxide levels did not appear to increase the effectiveness of the ingredients injected into the meats. A lower level of carbon dioxide — above 40 percent with the approximately 0.5 percent carbon monoxide level added to prevent discoloring — will help inhibit bacteria but appears to do so independently.

"There is still merit to the idea of using high carbon dioxide in modified atmosphere packaging because there are concerns about those particular microbial inhibitors such as diacetate," Sebranek said. "Some processors are beginning to back away from it because it has a bit of an acidic taste and a little sensory impact. The modified atmosphere would offer the opportunity to inhibit the organisms without the use of diacetate."

"You would probably not want to go as high as 99 percent," Sebranek said. "There can be a disadvantage to very high carbon dioxide, which is that meat systems will absorb a considerable amount if it's in the atmosphere."



Joe Sebranek

Carbon dioxide by itself has already been recognized for a significant effect of inhibiting pathogens, but concentrations over 30 percent or 40 percent usually result in discoloration of fresh meat. But in combination with carbon monoxide, the color is greatly improved.

"For fresh meat products, carbon monoxide gives you beautiful color," Sebranek said. The low levels of carbon monoxide will maintain stable, cherry red color and allows greater levels of carbon dioxide for extending the shelf life.

With cooked, cured, processed products, the higher levels of carbon dioxide are acceptable. It doesn't discolor those products as it does fresh meats such as ground meat or pork chops, where the use of carbon monoxide now offers significant color improvement.

Although combining modified atmosphere packaging with lactate and diacetate didn't add any significant benefit, the use of modified atmosphere packaging on its own still provides industry an important option. "The big advantage is the use of carbon monoxide in fresh meat from the color standpoint," Sebranek said. "That's something that's only recently been available." ■

Tea Time Means Danger for *Listeria, E. coli*

Take a serving of extracts from green tea or Jasmine tea, mix in some wildflower dark honey, and you have something more useful than a drink. It's actually a scientific mixture that can be used to reduce pathogenic bacteria in meats.

"Our results indicated that Jasmine tea with honey and green tea with honey had the highest antimicrobial activity," said Daniel Fung, the Kansas State University food science professor who supervised the research for the Food Safety Consortium.

The tests were first conducted in a liquid medium and found that the tea extract and honey treatments caused significant reductions of *Listeria monocytogenes* and *E. coli* O157:H7 bacteria. "That's not surprising," Fung said. "In liquid medium, it's easier for the compounds to interact with the organisms in liquid."

Then Fung, working with KSU researchers Beth Ann Crozier-Dodson and Laura Munson, moved on to food, which can be a more difficult medium when seeking to cause the type of reaction among the compounds that will inhibit pathogens.

The results were good. Treating turkey breast slice with combinations of Jasmine tea extract and wildflower dark honey reduced *Listeria monocytogenes* by 10 to 20 percent. Similar reductions of the pathogen were recorded when applied to hot dogs.

Daniel Fung

The most successful reductions in hot dogs were in those that had been commercially treated with sodium lactate, potassium lactate and sodium diacetate.

> *The experiments showed the hot dogs were still showing reduced levels of pathogens 14 days after the application.*

"In that type of hot dogs, it has much more suppressive effect than in some of the hot dogs without those compounds," Fung explained. "There is a synergistic effect of the tea and honey along with those compounds with lactate already in the hot dog."

One of the beneficial side effects of the treatment is shelf life. Fung noted that the experiments showed the hot dogs were still showing reduced levels of pathogens 14 days after the application.

With such favorable results from the tests, Fung is thinking ahead to future possible applications as a surface wash for meat during processing as well as way to improve the safety of ready-to-eat meats and vegetables.

"We're thinking of using tea to wash carcasses because of its natural compounds," he said. "If you can use tea or honey to wash carcasses instead of lactic acid, you can use a natural conpound on the surface of meat." ■

Food Safety Network Releases Infosheets

The newest food safety Infosheets, graphical one-page food safety-related stories directed at food handlers, are now available at http://foodsafetyinfosheets.ksu.edu.

Infosheets are created weekly by the Food Safety Network and are posted in restaurants, retail stores, on farms and used in training throughout the world. To request any Infosheet topics or photos, contact Ben Chapman at bchapman@uoguelph.ca.

Recent Infosheet highlights include:

- New research shows cat made child ill;
- Household pets can carry bacteria without being sick and introduce pathogens into kitchens;
- Businesses selling turtles illegally surged in Florida, which a local epidemiologist said was responsible for an increase in human *Salmonella* cases in the area;
- Keep pets out of the kitchen;
- Wash hands following any petting;
- Especially avoid pets with diarrhea.

Cochran to Serve as FSC Coordinator

Dr. Mark J. Cochran is the new coordinator and chair of the steering committee of the Food Safety Consortium. Cochran assumed the FSC duties upon being named by the University of Arkansas Division of Agriculture as associate vice president for agriculture-research and director of the Arkansas Agricultural Experiment Station on Nov. 1. He had previously been department head and professor of agricultural economics and agribusiness at the U of A.

Mark J. Cochran

Cochran will become a member of the office of the vice president for agriculture, which includes similar positions in extension and academic programs. The division is a statewide unit of the U of A System; it includes the Cooperative Extension Service and Arkansas Agricultural Experiment Station, and it supports academic programs on several university campuses.

"There is an ever-increasing number of issues that require direct administrative attention," said Vice President for Agriculture Milo J. Shult. "The creation of this post and Dr. Cochran's appointment will put us in an even better position to create innovative answers and efficiencies for the agriculture industry that depends on us.

"Dr. Cochran has provided outstanding leadership for our department of agricultural economics and agribusiness over the past 10 years," Shult said. "He is well-prepared to take this next step within the division."

Cochran has excelled as co-chair of the division's environmental task force, which includes both research and extension faculty and staff, said Shult, adding, "He has very successfully provided guidance and advice to our scientists as we have worked through difficult water quality issues affecting Arkansas and surrounding states."

Cochran will work alongside Dr. Ivory W. Lyles, associate vice president-extension, and Dr. Gregory J. Weidemann, associate vice president-academics, to provide seamless leadership across the land grant mission areas to ensure equal representation and accountability, Shult said.

Cochran came to Arkansas in 1982 after receiving his Ph.D. and M.S. degrees from Michigan State University. He received his bachelor's degree from New Mexico State University.

His accomplishments as a scientist and administrator were cited in the Arkansas Cotton Achievement Award from the Arkansas Cotton Group and the John W. White Outstanding Team Award from the Division of Agriculture for his role in developing the COTMAN cotton management system now used by farmers in several states. ■

KSU Plans Annual Rapid Methods Conference in June

The 27th annual International Workshop/Symposium on Rapid Methods and Automation in Microbiology will be presented June 15-22 in Manhattan, Kan. Conference sessions will be held at the Clarion Hotel at 530 Richards Drive and at Kansas State University, the host institution. Daniel Fung, KSU professor of food science, is the workshop director and founder of the event.

This workshop will focus on the practical application of conventional and new commercial systems of rapid identification of microorganisms from medical specimens, foods, water and the environment. Workshop participants will receive eight days of intensive theoretical and hands-on training in microbiological automation under the direction of Fung, an internationally respected expert in the field.

Two mini-symposia are included as an integral part of the workshop. The Rapid Methods mini-symposium is conducted the first two days of the workshop and features lectures, industry exhibits and a scientific poster competition. The National Alliance for Food Safety and Security Mini-Symposium held later in the week highlights original research work as well as summaries of key developments in nanotechnology, biosensors, infrared sensors, bioluminescence, immunomagnetic capture, immunochemical methods, phage displacement and protein-based microarray.

Previous participants, numbering about 3,500 scientists since the first workshop in 1981, have come from 46 states and 60 countries. Since 1990, 35 internationally known scientists have been designated as Distinguished Fellows. Since 1987, more than 50 outstanding graduate students and scholars have been named Fellows.

Beth Ann Crozier-Dodson, a KSU

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Johanns Promotes National Animal ID System

Partial transcript of remarks by Agriculture Secretary Mike Johanns to the Animal Identification/Information Exposition 2006 hosted by the National Institute of Animal Agriculture at Kansas City, Mo., Aug. 24, 2006

You have been a key part or really an incredibly complex, phenomenal effort to coordinate, collaborate, educate and to move forward with National Animal Identification System. …

We do have some out there who say, we just don't want to do this. But by and large the industry says, we recognize the need to do it. And I agree with that assessment. This is no small task. We can look at other countries as a model for what's been done. You know, we've got Canada up there to our north, we've got Australia out there, and these are two pretty good competitors of ours in the beef industry and in other industries as well. And they've kind of worked down through this path, if you will.

But compare the size of their herds to ours, and you begin to realize that we are biting off a big, big issue. And there would be no sensible reason for me to get up in front of you today and try to minimize that. This is very significant. …

But now we must redouble our efforts to take animal ID to the next level. I can promise you this: animal ID is going to remain one of my top priorities in the couple of years that I have left as Secretary of Agriculture. That means pressing forward with determination to achieve the goals that we have established. That means paying attention to the feedback we are receiving, which we have done and we are going to continue to do.

And that means educating and answering questions that pop up to address concerns and to do all I can to explain the benefits of this system. In fact I'd like to take just a moment or two, if I could, and spend a few sentences on that.

Some concerns have been expressed about various aspects of the system, and I would just simply like to confront those. For example, some people worry about the cost of the system, and we understand that. And many industries where we talk about animal ID, margins are oftentimes very, very tight; cost is a very relevant consideration. …

Others have questioned whether it will be effective, whether it's just too bureaucratic. Some are concerned about the confidentiality of data that would be included in the system.

I'm here today to say that we're listening to those concerns. The adjustments we've made along the way I hope you view as evidence that we are listening, and we will continue to fine-tune the system based upon what you're telling us, based upon what you're seeing out there in the field.

Now just a couple moments ago I encouraged ID manufacturers to submit applications recognizing the value of ensuring that our producers had numerous choices. USDA is ready, willing and eager to review all applications, to review all technologies. Part of our goal in allowing for a competitive environment is to do all we can to keep costs down. We believe that competition is the best way of doing that.

A competitive system includes price competition, and we hope it means a better deal for our producers. By opening the door to the private sector involvement, I believe we are addressing another concern that we've heard a time or two about the system becoming bureaucratic. You know ladies and gentlemen, let me just be real straight with you. Perhaps there was a time when that concern gained traction based on the notion of one massive system somewhere in the bowels of the USDA that would contain all of your private data, this notion that this massive system would be entirely run by the federal government, this notion that it was going to be the Washington way or the high way.

And you see what? I don't believe in that. I believe that the best system is going to be driven at the ground level by you, by producers, by those who are involved in it. You see, today we have strong private sector involvement that is building this plan, and it's a voluntary system. So it must meet the needs of the producers in order to encourage them to be involved and to garner their support.

But that's the kind of system I fundamentally believe is best for these industries. From the time I held that first conference on animal ID back when I was governor of Nebraska, I had two very clear opinions that the best approach would be a voluntary system and that this system should be driven by the private sector.

I firmly believed then, and now nearly two years into this job as Secretary of Agriculture I continue to believe today, that the best innovation, the best price competition, the best opportunity for producers is the voluntary system.

We'll be issuing a comprehensive document within the next few months that lays out exactly what animal ID is and what it is not that will help to answer questions about how the program will work. We've already published a guide for noncommercial producers that addresses their questions, and we're also conducting a grassroots outreach campaign to correct misinformation, encourage participation and make sure producers understand the value of animal ID. …

It is absolutely incumbent that we come to grips with how we move this forward. This ID system will enable health officials to stop the spread of disease and lessen the economic and other social impacts of a disease outbreak.

Now ladies and gentlemen, I pray that disease outbreak never arrives and

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Johanns Promotes…
continued

we never have to put this system to full implementation. But if it does on just one occasion, we will be glad that we fought this battle and did everything we can do to put this system in place. Everyone in this room, every single person in this room, understands the consequences of an outbreak. The loss of breeding stock, the labor time, the loss in trade, the economic loss that occurs to our farmers and ranchers. It can be staggering to producers, and it can be staggering to our rural communities.

Quick identification of infected animals means less exposure. It means that we can isolate the issue quickly and deal with it. It means less time and money spent on eradication work. And it may mean the survival of an industry. The faster we can assure consumers and trading partners of the health of our herd during an outbreak, the less economic impact on absolutely everyone, from U.S. taxpayers to commercial and noncommercial producers, to customers and to federal, state regulators.

We can't overlook the importance of having the ability in certain trade situations to define regions that are affected by outbreak. This can translate into protections for large segments of the industry. In this kind of event, a National ID System will give us detailed data to quickly identify the scope of the disease. We'd have the tools we need to reassure our trading partners and help prevent widespread market closures.

You know, if you ever wonder for a moment, can it happen, I'd just call your attention to the beef industry in December 2003. I rest my case.

Speaking of our trading partners, as you look to other parts of the world another reason why a national system is important becomes crystal clear. Other countries like Australia are aggressively marketing their animal traceability, and you know why they are doing it? It's a competitive advantage, and believe me they are fierce, fierce competitors. There's no question that market demands like source and age verification and traceability are gaining in importance literally daily and weekly. In time, demands like these may well become a primary driver as we move toward greater and greater participation in the system.

So I believe that a National Identification System is important. It's absolutely necessary.

But to achieve this there's so much at stake. We must have everyone on board. Our stakeholders must be committed to animal ID for the long term if we are to be successful.

And that brings me to the last concern I outlined a few minutes ago, the concern about producer confidentiality. I'm fully aware of the importance of confidentiality to our producers. So let me address this issue head on.

Reference was made to my ag background, the fact that I grew up on a dairy farm on North Central Iowa. I've spent virtually all my political career working with ag producers. That would be especially true in the years I was governor of a really great ag state, the state of Nebraska. I got to know these producers because I'll tell you in many cases they were great supporters of what I believed in. I also understand very, very well their desire to protect their private information.

And you know what? That desire is right on the mark. It is absolutely right on the mark. You know when I arrived and somebody explained to me this massive system where a government agency was literally going to have possession of data which I know my friends in the ranch industry regard as enormously sensitive private information. …

I could not be more aware of the importance of confidentiality to our producers, and that's why I do want to address this issue head on. First I will tell you that I agree wholeheartedly with the livestock producers who believe that information about your livestock is your business, period. The business of agriculture has undergone significant change in the past few decades. The image of a producer taking his crops and livestock to market is changing. In today's very highly competitive marketplace, a farm or a ranch's operations should remain confidential; they should be protected.

As I said, as someone born and raised on a farm in Iowa and as your Secretary of Agriculture, I do not believe I should be in the business of possessing your information, your personal business information.

That's why I have directed APHIS to create an Animal ID System that will hold information about animal movements in the private sector and in the state databases that chose to go in a state direction. Animal movement information registered in the private animal tracking database is private. It should not be a USDA record. That information cannot be released by USDA because we don't own it, and we don't control it, nor should we.

Only in the event of an animal disease outbreak will USDA go to the holder of that information and explain to them what they need, and the holder of that information will supply it to us. Even then and only then, only that information relative to the disease outbreak will be collected and retained as a part of that investigation.

I also heard you say you trust USDA with your information but you're worried about other federal agencies going on a fishing expedition in the data. Again I want you to know I hear you, but the answer to that question is really straightforward. By law USDA cannot alter its Privacy Act systems of records to other agencies. We can't. We simply can't do it if we wanted to, and I will tell you we don't want to. You've said that you're worried about an activist group will request premise data which would contain names and addresses and other information about your premises. Let me assure you that names and addresses are protected under the Privacy Act, so again that information cannot and would not be released. … ■

Deliberate Food Contamination Not a Worrisome Topic for Public

It will be up to the government, industry and the research community to worry about the prospect of terrorists deliberately contaminating foods; the public isn't too worried about it.

Howard Moskowitz, president of the Moskowitz Jacobs market research firm in White Plains, N.Y., looked into the subject and presented his findings at the Institute of Food Technologists convention in June in Orlando.

"Food supply contamination is clearly important based upon the reactions of the respondents," Moskowitz said. "But it's not at the top of their list."

Moskowitz's group examined attitudes not by directly asking people about their fears of food contamination, but by measuring the "hot buttons of anxiety," or what types of fears people find hard to cope with. The goal of his project was not to ask people what was important to them, but to ask them to respond to certain stimuli about how well they would deal with those situations.

They had the opportunity to evaluate how they would deal with various situations, such as bombs blowing up buildings or food contamination. Responses could range from dealing easily with the particular problem or not dealing well at all with it.

"We found there's anxiety when we talk about contamination of the food supply," Moskowitz said. "The anxiety goes up. It's important, but it's not a first-tier issue."

The food industry worries about terrorism affecting its products, he said, "but it's not a major concern to the respondents."

The situation can be measured by types of anxieties: general anxieties or specific anxieties. For people who react to general anxieties, Moskowitz said food supply contamination is virtually irrelevant. But it's a serious matter to those who react to specific anxieties. Still, Moskowitz said, "in both situations, the contamination of the food supply is probably a second order or low first-order problem." He explained that the people view it as more severe than a building fire but not as severe as a bomb under their car.

'It's important, but it's not a first-tier issue.'

"It's not food, per se," Moskowitz said. "It's on whether they tend to be a general anxiety reactor or a specific one."

The research shows that those who are especially anxious about things in general are usually reassured by the shelter of God, family and friends. "Certainly if you tell the people that international cooperation and the UN will keep you safe, you increase the anxiety, not decrease it," he said. ■

KSU Plans...
continued

food science postdoctoral research associate, will serve as laboratory coordinator. Visiting professors will be Millicent C. Goldschmidt of the University of Texas Health Science Center Dental Branch faculty and J. Stanley Bailey, a U.S. Department of Agriculture research microbiologist.

Details about registration and other information is available online at http://www.dce.ksu.edu/conf/rapidmethods/. For more information about the conference's scientific content, contact Fung at 785-532-5681 or at dfung@ksu.edu. For information about other aspects of the conference, contact Debbie Hagenmaier, the program coordinator, at debbieh@ksu.edu, 800-432-8222 or 785-532-5575. ■

Papers & Presentations

Daniel Fung, Kansas State, was recognized in November by the Autonomous University of Barcelona in Spain as a distinguished professor. The award was presented in recognition of Fung's contributions as keynote speaker and principal lecturer at the university's Rapid Methods and Automation in Food Microbiology Workshop since it was founded in 2002. He is the first scientist to receive the title at the Barcelona institution. In the past five annual workshops, the average number of participants was about 200 per year. The university has a student population of about 50,000.

Jim Dickson, Iowa State, was elected associate director of the Center for Intervention Strategies of the National Alliance for Food Safety and Security. His research focuses on intervention strategies, including irradiation, for controlling bacteria of public health significance. The center's focus is to develop strategies that will facilitate the production of healthy animals and safe plant-derived foodstuffs. Dickson is also director of the Food Safety Consortium at ISU.

Yanbin Li, Arkansas, reported the following publication:

Varshney, M., Y. Li, B. Srinivasan, S. Tung, G. Erf, M.F. Slavik, Y. Ying and W. Fang. 2006. A microfluidic filter biochip-based chemiluminescence biosensing method for detection of *Escherichia coli* O157:H7. Transactions of the American Society of Agricultural and Biological Engineers, 49 (6): 2061-2068. ■

Food Safety Digest

by Dave Edmark

Consumers may not know as much as they think they do about how to handle food safely, and they're setting themselves up for bouts with foodborne illness. So the Partnership for Food Safety Education and the U.S. Department of Agriculture started a new project to communicate messages about safe food handling.

The initiative — Be Food Safe — is the result of surveys that showed most adults don't know they have a one-in-four chance of contracting a foodborne illness. "We are concerned that if adults do not fully understand how common foodborne illness is, they will not be vigilant about handling foods properly to safeguard their health and that of their families," said Shelley Feist, executive director of the Partnership.

The campaign will focus on four core messages to reduce the risk of foodborne illness: clean hands, utensils and cutting boards before and after contact with food; separate raw meats, poultry and seafood from foods that won't be cooked; cook with a food thermometer to be sure the food is done; and chill leftovers and takeout foods within two hours while the refrigerator temperature is no higher than 40 degrees F.

Education materials for the Be Food Safe campaign can be downloaded at http://www/fightbac.org.

■ ■ ■

Risk-based inspection may be coming to a processing plant near you. The USDA Food Safety and Inspection Service is considering a proposal that would require its inspectors to concentrate largely on plants that have a history of safety problems.

"Our goal with a robust risk-based inspection system is to find a way to increase our inspectors' time in processing plants where they could, for example, spend time at a plant that is having difficulty controlling *Listeria*, allowing them to go over our compliance guidelines with the plant's management, review plant records and even conduct environmental swabbing if appropriate," said Richard Raymond, USDA undersecretary for food safety. "These are activities that directly relate to improving food safety."

Feedstuffs reported that at a public meeting on the proposal, Raymond explained that plants would be rated on their compliance history. Plants designated Level 1 would be those with the best records and would receive the least amount of inspection, although daily inspections would still take place in all plants. Plants at Level 5 would be those with poor food safety records producing highest-risk products and would receive the most inspection.

■ ■ ■

The idea has been around for several years, and it comes up for renewed debate occasionally. The topic is whether to consolidate the federal government's food safety regulatory agencies into one. With the switch in party control of Congress after the November elections, three members of the Congressional Food Safety Caucus announced plans to introduce legislation to consolidate all food safety agencies and establish the Food and Drug Administration as the responsible agency for food safety.

The legislation is sponsored by Rep. Rosa DeLauro (D-Conn.) and Sen. Dick Durbin (D-Ill.). DeLauro cited last fall's outbreak of spinach contaminated with *E. coli* as an example of the need for a strong food safety system.

Elsa Murano, former USDA undersecretary for food safety, was quoted in *Feedstuffs* as also calling for consolidation of all food safety inspection under one agency. But she said that agency should be USDA rather than FDA.

"FDA has its hands full with drug approval," said Murano, who is now vice chancellor and dean of agriculture and life sciences at Texas A&M University. "It needs to get out of the food inspection system. Congress should just put that on USDA completely." ■

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Your comments are welcome.

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