

FOOD SAFETY CONSORTIUM

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In recent years, food safety has become an issue of concern for the beef industry, beef processors, and the consuming public. Even though America has the safest and most wholesome food supply in the world, consumers are worried about the safety of the meat they eat. In response to reports of illness from contamination by both microbes and chemicals in the meat supply, the United States Congress, in 1988, authorized and funded a Special Grants Program in the United States Department of Agriculture called the Food Safety Consortium. The members of the Consortium are Kansas State University, the University of Arkansas-Fayetteville and Iowa State University. Each university is charged with performing research to:

- develop technology for the rapid identification of infectious agents and toxins;
- develop a statistical framework to evaluate the potential health risks;
- determine the most effective intervention points at which to control microbiological or chemical hazards;
- develop risk-monitoring techniques to detect potential hazards in the distribution chain;
- reduce or eliminate microbial or chemical hazards associated with production, processing, and distribution.

Each of the universities involved is conducting research to meet the above objectives by concentrating on a different muscle food. With Kansas being one of the nation's largest producers of beef and the largest beef processor, Kansas State's research has focused on these

objectives as they relate to the production, processing, packaging, and distribution of beef. The University of Arkansas is emphasizing poultry and Iowa State, pork. This year, the Consortium schools have split funds in excess of \$1.7 million.

Kansas State has made significant progress in several areas. Dr. Daniel Fung's laboratory has been extremely active in the study of microbiological isolation, detection, and enumeration. The laboratory has developed a system to rapidly identify certain pathogenic microbes that may be found in beef. This system will provide an inexpensive and rapid method that can be used by processing plant management or inspection officials to identify potential microbial hazards before the product is shipped. The University has applied for a patent on the process.

Dr. Scott Smith's laboratory is investigating the potential for residues of organophosphate pesticides and their metabolites to appear in beef. He is developing techniques to detect levels of these chemicals at various times post-treatment. To accomplish this end, Dr. Smith has equipped his laboratory with some of the most sophisticated analytical equipment available, making it one of the best laboratories of its type in the country.

Drs. Danny Simms, Gerry Kuhl, Dave Schafer, and Bob Larson are researching new identification systems for live cattle and have surveyed currently used identification and drug recordkeeping systems. Their work will be important in 1) helping to identify points in the production chain where hazards may be prevented and 2) providing information to producers on better methods for avoiding residue

problems.

Drs. Curtis Kastner, Melvin Hunt, and Don Kropf have investigated different packaging methods, including modified atmosphere packaging, and various processing methods to determine the points at which contamination may occur or may be prevented. They are also studying how newer types of processing, including low-salt and/or low-fat, and restructuring might affect the growth of pathogenic bacteria. Factors that influence apparent degree of doneness and cooked color are being evaluated, because consumers use color to gauge microbial survival.

Dr. Frank Cunningham's laboratory is testing various combinations of organic acids, antioxidants, enzymes, and other approved food additives that control microbial growth on carcass and product surfaces. These may be useful in reducing the incidence of spoilage and potential pathogens.

These scientists, working with their colleagues both here and at the two other Consortium institutions, are dedicated to finding the answers necessary to keep Kansas beef products the safest and most wholesome in the world.