Facts About E. coli and Dried Distillers Grains With Solubles

Background

Escherichia coli (E. coli) are a large and diverse group of bacteria found in the intestines of animals and humans. While many types of this bacteria are harmless to humans, a few can cause serious illness and even death. One of most dangerous strains (E. coli 0157:H7) causes serious health problems and is known to infect more than 70,000 patients a year in the U.S.\(^1\) It has been reported to cause both large outbreaks as well as isolated sporadic infections in small numbers of individuals.

E. coli can be found in undercooked meats, including beef, pork, poultry and lamb, untreated water, unpasteurized milk or fruit juices, and raw fruits or vegetables. In fact, E. coli is found in many of the products that people consume, but is manageable because any threat can be eliminated through proper handling, storage, and cooking.

In recent decades, as the bacterium emerged as a health concern, so did measures to control consumer cases. As more information about the bacterium becomes available, much more is being done to eliminate the bacterium from consumer products. Therefore, while it may appear that there are a greater number of cases of E. coli contamination due to its prevalence in the media, actual cases are less. In 2008 the Food and Safety and Inspection Service at the U.S. Department of Agriculture confirmed a 43% drop in the percentage of ground beef samples infected with E. coli. compared with the previous year.\(^2\)

Despite this success, popular media often overstate the likelihood of a consumer contracting E. coli contamination and falsely link it to the animal production and processing methods (rather than inappropriate handling, storage, or cooking).

Dueling Studies - But Animal Feeding Not the Problem

Some speculation exists that the use of dried distillers grains with solubles (DDGS), as feed for livestock leads to an increase of E-coli the bacteria in the animals. This speculation led to several university studies in recent years.

In a 2007 Kansas State University (KSU) study, the effects of using the co-product DDGS as a source of food for livestock were analyzed. The study was conducted to
examine the theory that the use of DDGS was causing an increasing trend of E. coli in meat and dairy products. The study concluded that the use of DDGS as a source of food in livestock did increase the appearance of E.coli in dairy and meat products. However, several follow-up studies resulted in very different conclusions. A Nebraska research team studying E. coli contamination later reported that its studies did not support KSU's original findings that byproducts from ethanol contribute to the prevalence of a toxic strain of the pathogen in cattle. The team of scientists at the University of Nebraska-Lincoln noted no increase in the prevalence of E. coli O157:H7 in cattle fed distillers grain. The team found that cattle fed 40 to 50 percent distillers grains showed increased rates of E. coli, cattle fed a diet of 10 to 30 percent of the product actually had lower E. coli levels than those on an all-corn diet. Several other studies backed the University of Nebraska's findings; including one conducted by KSU. In it, KSU concluded that much more research was needed in order to support the original study's claim.

Eliminating E-coli - Consumers Can Eliminate Any Threat of the Bacteria Themselves

With roughly 70,000 cases reported each year, E. coli is definitely a consumer concern. Hundreds of strains are harmless, including those that thrive in the intestinal tracts of humans and other warm-blooded animals. These strains are part of the protective microbial community in the intestine and are essential for general health. While a concern, E-coli can be completely avoided by following a few simple guidelines. Properly washing hands before preparing food, or after having contact with animals is always advisable. Secondly, meat should be thoroughly cooked to eliminate any trace of the bacteria. Finally people should avoid raw milk and unpasteurized milk and juices. By following these simple guidelines, consumers can effectively eliminate any threat that the bacteria poses.

E. coli Samples Reduced - As Testing and Food Safety Improve

According to the Food Safety Inspection Service at USDA, E. coli contaminated samples were down 43% in 2007 over 2008. This is directly related to "the strong science based policies aimed at reducing pathogens in America's meat, poultry, and egg products." FSIS conducts several safety audits and tests to increase the safe practices that are involved in producing food. Food safety plants have recently been required to incorporate several new safety procedures. Also a new rapid detection system has been implemented to catch food borne pathogens and ensure safer products are being released into the public.

DDG Use – Beneficial To Farmers and Their Livestock

Research has found that the use of the co-product DDGS can be beneficial to producers and their livestock. The Iowa Corn Growers Association (ICGA) compiled research on the dietary benefits of DDGS. Overall, DDGS has more energy per pound than corn. DDGS is an excellent source of energy and protein for dairy diets. It replaces the starch in corn with fat and fiber, resulting in fewer upset stomachs for livestock. Dairy cows fed DDGS are at least as productive
and sometimes more productive) as dairy cows fed diets of soybean meal. As long as DDGS is under $100/ton, feeding DDGS to growing and finishing Holsteins can increase profits. On top of the health benefits for the livestock, the use of the co-product enhances producer profits. While losing no nutritional value, the price of a diet that uses DDGS to replace traditional food, such as corn, provides a cost relief for the farmer.viii

Illinois Farm Bureau Policy:
IFB policy supports “continued research into ruminant and non-ruminant feed utilization of renewable fuels Distiller’s Dried Grains with solubles (DDGs) co-products.” That policy language points to the importance of ongoing research into DDGs feeding and its impact on animal and human health. IFB policy also supports “quality control standards at renewable fuel plants that result in uniform, high quality co-products from renewable fuels.”ix

Conclusion
Escherichia coli (E. coli), although it can be a dangerous and serious problem for consumers, is a threat that people can eliminate with proper care and management of the food that they consume. It is a present and necessary bacterium found in the digestive tracts of humans and animals. It had been speculated that the use of dried distillers grains with soluble as a source of food for livestock was the cause of increased E. coli in meats and other foods. A Kansas State University falsely confirmed this suspicion and caused a great deal of controversy on the matter. The findings of the study were soon after proved irrelevant and new research continues to support the conclusion that DDGs are not a definite culprit of the presence of the bacterium. DDGS provides several benefits to farmers and livestock, and much more research is needed to correctly confirm the relationship between the co-product and the bacterium.

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i “E. Coli 0157:H7”. www.medicinenet.com/e_coli__0157h7/article.html
ii E. coli cases see significant reduction. www.foodqualitynews.com (March 2005)
v “Understanding E. Coli: National Institute of Allergy and Infectious Disease” www3.niaid.nih.gov/topics/ecoli/
vi “Escherichia coli: General Information”. www.cdc.gov/nccdphp/dhdnp/disease_listing/stec_gi.html#16
vii E. coli cases see significant reduction. www.foodqualitynew.com
viii “Distillers Dried Grains with Solubles” www.uiowa.edu/~ipro/Papers%2020007/DistillersDriedGrains.pdf
ix “Renewable Fuels” Illinois Farm Bureau Policy Resolutions 2009 p. 9

Additional Sources: