



# The E. Coli Vaccine And Its Effects

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## Introduction

- E. Coli O157:H7 first recognized as an illness in 1982.
- Not only can infection come from meat, but also from unpasteurized milk and apple cider, ham, turkey, roast beef, sandwich meats, raw vegetables, cheese, and water.
- Escherichia coli has been a problem in the agriculture economy for generations. Many laws have been put into play and improvements have been done in suppressing the E. Coli outbreaks. Now the next step in preventing E. Coli in the first place is through vaccinations. Even though vaccinations to prevent E. Coli has not entered the market, it has been researched and a vaccination has been found.

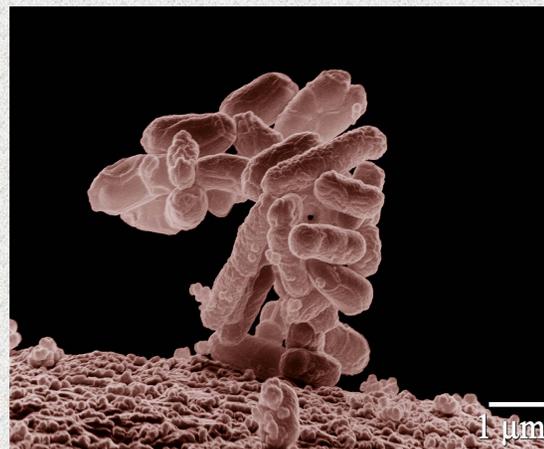


## Objectives

- Where do the major sources of E. Coli come from?
- Would the vaccine cure a cattle or person 100%?
- How much of the bacteria E. Coli O157:H7 would it take to get someone ill?
- Is the vaccine licensed to be sold in the U.S. economy?
- Would the vaccine have any health effects to the cattle or to the consumers of the meat?
- What is being done to produce to prevent outbreaks of E. Coli?

## Review of Literature

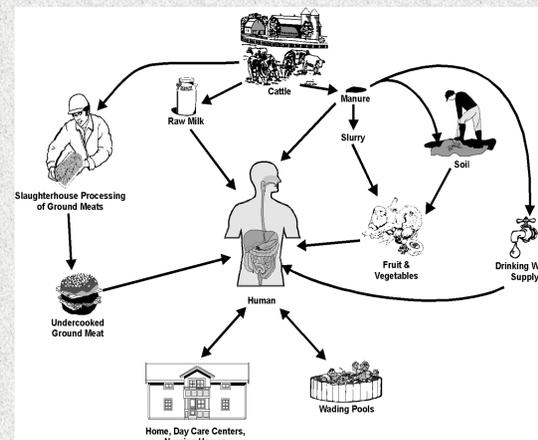
- Escherichia coli causes an estimated 500,000 deaths annually, mainly due to dehydration. (Powers)
- EpiTopix LCC is the first in the U.S. market given federal license to sell vaccines for cattle. (Press)
- Vaccine prevents E. Coli from absorbing iron, which in turn causes the E. Coli strain to die. (Press)
- The USDA approved E. Coli vaccine showed a decrease of 85% of E. Coli in animal shedding. (Phang)
- Escherichia Coli does not only infect plants through contact on the surface, but it can also enter the plant through its root system and get transported upward to locations within the edible portions of the plant. (Solomon, Yaron, Matthews)
- E. Coli can travel on flood waters and land at quite a distance from the initial source.



## Possible Sources of E. Coli

- Undercooked meat (Iannelli)
- Unpasteurized milk, juice, or cedar. (Iannelli)
- Contaminated drinking water, pools, or lakes. (Iannelli)
- Incomplete hand wash after restroom use or diaper change can leave E. Coli bacteria on surface of the hand. (Iannelli)
- E. Coli can be introduced to crops through flood irrigation with water contaminated with cattle feces.(Solomon, Yaron, Matthews)
- Fruits picked up from contaminated ground can also get infected.
- Improperly treated manure can contaminate a field fertilized with manure, thus contaminating plants grown on the field.(Solomon, Yaron, Matthews)

## Sources of E. Coli



## Symptoms of Infection

- Nausea and vomiting.
- Diarrhea, watery at first, but often becoming very bloody.
- Severe stomach cramps.
- Symptoms usually end in about a week with no problems afterwards.
- Hemolytic Uremic Syndrome, a complication that results in low red blood cell count (hemolytic anemia), a low platelet count (thrombocytopenia), and kidney damage (renal failure) can be permanent. (Iannelli)

## How to Prevent Infection

- Never thaw meat at room temperature.(Lee)
- Wash everything touched with raw meat with warm soapy water. (Lee)
- Cook burgers thoroughly and the inside of the meat should not be pink. (Lee)
- Consume only pasteurized milk and milk products, raw milk is not healthier. (Lee)

## Conclusion

• E. Coli can be found almost anywhere in the environment. There is more probability of E. Coli being present in areas where animals have been, but there is also a probability of even getting it from shaking hands with others. Escherichia coli cannot really be eradicated once it is out in the soil, and so the only way to prevent it is to stop it at the source. That is the reason the vaccine targets the proteins in the animals so the Escherichia Coli cannot absorb iron. Iron to a Escherichia Coli bacteria is like air to us humans. The vaccine reduces dramatically the percent of E. Coli being deposited in feces by up to 85%.



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