

A simple, cheap way to block pathogens

Grovac processing, developed in the mid-80s and currently used in seafood and poultry operations, could offer small meat processors and retailers a way to reduce the pathogen load in their meat products, while increasing shelf life.

By David Edmark

The traditional way of making ground beef – mixing pieces trimmed from larger beef cuts and grinding them – creates some food safety challenges for processors trying to stay a step ahead of the troublesome *E. coli O157:H7* pathogen. A Kansas State University project may have found a way to use a popular processing system to make the ground beef safer.

It's the Grovac process, developed, trademarked and patented (both in the US and EU) in the mid-1980s by Grovac Systems of Pine Bluff (Arkansas, US). Food Safety Consortium researcher Randall Phebus of the KSU food science faculty found that it delivers a modest reduction in the level of pathogens in ground beef and that it is especially well suited for small retail operations as well as larger retail firms.

Simply beautiful

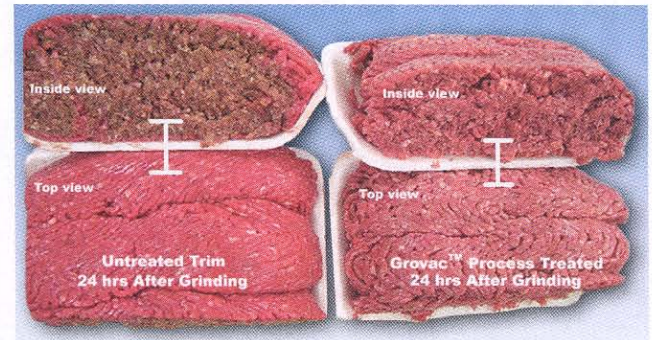
"The beauty of the Grovac

system is that it's so simple," Phebus says. "It's not expensive. It would be appropriate and plausible for small retailers to use it. As far as I know, it's not currently being used at all [by small beef retailers]. It has become more widespread in the seafood and poultry industries. We're trying to break into the red meat side of it."

It would be an important development for red meat, because retail meat grinders have not had an antimicrobial intervention strategy available to them that minimises the risk of contaminated beef. A validated intervention technology such as the Grovac system at the final production stage would place a significant hurdle in pathogens' way, Phebus explains.

How it works

The Grovac system treats beef trimmings in a mixture of citric acid and a hypotonic salt solution while tumbling under



Scientific studies have proven that the process maintains good bloom even 24 hours after grinding. There are also indications that the treated ground meat keeps the bloom seen in the picture for up to five days after grinding. Photo: Grovac.

a vacuum. The citric acid kills the bacteria. Meanwhile, the citric acid also acts as an antioxidant and preserves the ground beef's bright red colour for a longer shelf life.

Additional shelf life and better protection from pathogens could make the Grovac process a popular one among small-retail meat processors who cannot compete with the larger stores' more cost-efficient overheads.

"If you were able to demonstrate that treated trim and store-generated ground beef had even a single day of extra colour, they (small stores) would go with it because they throw away so much product that has gone off colour after one day," Phebus says. "The main problem with ground beef and even subprimal steaks is that after a day in the lighted display case, it goes off colour. They either have to mark it down drastically or use it for something else and they lose a lot of money on that."

One firm, Costco Wholesale,

enlisted KSU to test the process on its ground beef and also conducted its own in-house studies that showed continued microbial reductions and longer shelf life.

Valid solution?

Although the reduction in pathogens is considered modest, that's not a problem. The KSU study pointed out that pathogen contamination level in finished ground beef tends to be low and infrequent, particularly for *E. coli O157:H7*. Effective pathogen control programs must be used earlier in the processing, with the Grovac intervention being a final degree of control as an end-of-the-process treatment, Phebus says.

Furthermore, the Grovac system can also be applied with a new dip processor that is useful for beef, poultry, and pork. When dip processing beef the antimicrobial function and the bloom of the final product are both improved, according to Grovac. **MI**