



News Release

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ECBC provides chemical analysis of meat product

Collaboration with SDSU ensures hazardous levels of anti-parasitic agent were not present

ABERDEEN PROVING GROUND, Md. – After two weeks of chemical analysis, the Chemical Biological Application and Risk Reduction (CBARR) Business Unit of the U.S. Army Edgewood Chemical Biological Center (ECBC), concluded there were no hazardous levels of the Ivermectin compound in the meat samples that South Dakota State University (SDSU) had sent for testing.

Connected through the Food Emergency Response Network (FERN), the SDSU and ECBC laboratories had investigated a meat sample that may have been contaminated with the anti-parasitic agent typically used in pesticides. When a South Dakota beef producer had voiced concerns over the safety of its product to a meat inspection staff, SDSU sought the expertise of ECBC's laboratories to conduct chemical sampling analysis.

"It was really great," said Laura Ruesch, research associate II at SDSU. "I would have had no way of knowing that ECBC existed if it weren't for the FERN. It was a really great way to connect people who have the resources and similar interest in food testing, but otherwise would not have had contact with one another."

FERN, an integrated system of food-testing laboratories across local, state and federal levels in the United States, facilitated the partnership between SDSU and ECBC's CBARR Business Unit laboratories at the APG, Md. Federal and state funding cuts caused SDSU's biochemistry laboratory to close in 2011, leaving the university without the facility or personnel to support a core chemistry capability for food testing. Furthermore, the absence of a Department of Agriculture laboratory in South Dakota left Ruesch with little state resources to reach out to. Instead, she utilized her contacts within FERN to connect to CBARR's Environmental Chemical Monitoring Laboratory.

As part of South Dakota's meat inspection program, SDSU needed to conduct additional chemical testing on a meat sample to determine whether or not Ivermectin, an anti-parasitic agent, was present. According to Ruesch, the Ivermectin compound is used in a pesticide that is poured on live cattle to control internal and external parasites such as roundworms, cattle grubs, mites, lice and flies.

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“Typically, there is a withdrawal period of 45 days before they can slaughter that animal,” Ruesch said. “Whatever product was absorbed into the body of the cow was processed by the liver and kidneys and excreted via feces and urine so levels present in the tissue are reduced to tolerable levels.”

The meat sample in question, however, had been processed before the 45-day time period, after only 28 days. Additional testing was conducted by CBARR to ensure the meat sample was not contaminated and the Ivermectin compound was not still present. The anti-parasitic agent is widely used as insecticides in agriculture, gardens and veterinary practices. When exposed to unsafe levels of the chemical, humans may develop mydriasis, depression, coma, tremors, ataxia, stupor, vomiting and drooling.

Nam-Phuong Nguyen, CBARR senior chemist, was excited to take on the task. Based on previously proven USDA methods and the work conducted with raw milk samples, Nguyen developed and verified the appropriate method for detecting the presence of Ivermectin in the ground beef product sample provided by SDSU.

Nguyen had previous experience creating and verifying testing methods, an invaluable resource when conducting this type of work with a quick turnaround time. According to Nguyen, other projects tend to take longer to complete because they typically involve validating another scientist’s methods. But because Nguyen had designed the test methods for the FERN project herself, there was only one matrix and one analysis that needed to be done. Method validation serves to ensure that a specific process provides the results researchers anticipate.

“Before working on this project for SDSU, CBARR had done work on a food project for the USDA where we were asked to validate their developing method of detecting three compounds of interest in various food matrices, including orange juice, apple juice, egg yolk, egg white, whole milk, 2 percent milk, hot dog and ground beef, and deli turkey,” Nguyen said. “Although the two projects were seemingly different, the same concepts, with respect to the development and validation of methods, were applied.”

Out of nearly 10 laboratories across the country who responded to SDSU’s FERN request for chemical testing capabilities, CBARR was the only one awarded the work. CBARR was accepted into FERN as a chemical, biological and radiological testing laboratory in January 2009, and has performed method equivalency testing for biological analysis with food matrices for other FERN partners. The work with SDSU marks the first time CBARR has expanded its FERN efforts to include chemical testing.

For more information about ECBC, visit <http://www.ecbc.army.mil/>.

ECBC is the Army’s principal research and development center for chemical and biological defense technology, engineering and field operations. ECBC has achieved major technological advances for the warfighter and for our national defense, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. ECBC is a U.S. Army Research, Development and Engineering Command laboratory located at the Edgewood Area of Aberdeen Proving Ground, Maryland. For more information about the Edgewood Chemical Biological Center, please visit our website at <http://www.ecbc.army.mil/> or call (410) 436-7118.

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