

Keeping oysters, clams and mussels safe to eat

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Eating raw or undercooked mollusks may pose a safety hazard if they are harvested from waters polluted with pathogenic microbes, so U.S. Department of Agriculture (USDA) scientists are studying ways to enhance the food safety of these popular shellfish.

For example, USDA molecular biologist David H. Kingsley at Delaware State University in Dover is exploring new techniques that will decontaminate [mollusks](#) while protecting the seafood's flavor, texture, and color.

Kingsley, with USDA's Agricultural Research Service (ARS), is investigating the use of a specialized commercial procedure known as high pressure processing, or HPP, to inactivate viruses. HPP is already used commercially to pasteurize some juices and meats, and by some shellfish processors to deactivate *Vibrio* bacteria. But Kingsley and colleagues are the first to show that HPP also can inactivate some foodborne viruses.

HPP equipment compresses water to create intense pressures as high as 90,000 pounds per square inch. Normal [atmospheric pressure](#) is about 15 pounds per square inch at sea level.

In tests targeting hepatitis A [virus](#), the cause of a contagious liver disease, the team showed that an HPP treatment of 60,000 pounds per square inch of pressure for five minutes inactivated 99.9 percent of the virus in oysters that had been exposed to the pathogen in laboratory

tanks.

The hepatitis A studies led to a collaboration with researchers in Italy, where raw or lightly cooked Mediterranean mussels, popular in European markets, are sometimes a vector for the virus. The ARS scientists and colleagues from Italy's University of Bari found that the 5-minute, HPP treatment inactivated 99.9 percent of the virus in North American blue mussels and in Mediterranean mussels.

HPP is not perfect. For instance, the pressure needed to inactivate hepatitis A virus may alter the taste and texture somewhat. Additional research may reveal ways to mitigate these changes.

Kingsley and his co-investigators have published these and other findings in *Food and Environmental Virology*, *Virus Research* and other scientific journals. The Dover team is part of the ARS Eastern Regional Research Center in Wyndmoor, Pa.

Provided by United States Department of Agriculture

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