Goodbye 'R' rule? Oyster pathogen test may help make shellfish safer

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(PhysOrg.com) -- The oyster lover's axiom of edibility -- that this shellfish is safest to eat in any month with an 'r' in it -- may soon become somewhat of a culinary anachronism, thanks to a new food-safety test developed with help from the University of Florida.

Oysters are typically considered safest to eat in cooler months (September through April) because the shellfish-infecting bacteria in the genus Vibrio flourish best in warm temperatures.

Even in the "r" months, slurping an oyster opens some people to infection from these bacteria, which can cause fever, nausea, abdominal pain, diarrhea and has even led to finger amputation when it's given a chance to penetrate a cut or skin lesion.

However, a new quick and inexpensive diagnostic test developed by DuPont Qualicon and refined by UF's Institute of Food and Agricultural Sciences could make weeding out pathogen-loaded oysters much more practical and efficient. Oysters are a $14 million industry in the Sunshine State, according to the Department of Agriculture and Consumer Services.

The test is based on a technology dubbed "quantitative polymerase chain reaction," or QPCR diagnostics. Given a small sampling of oyster, shrimp or ahi tuna, the system tracks genetic material found in three harmful species of Vibrio by amplifying their DNA into large amounts that are easily detected.

This is the first time this technology could be used in detecting pathogens in seafood on an industrial scale. So, after initially developing the basic lab-bench test, DuPont turned to UF to prepare it for commercial use and regulatory approval.

“Whether you have raw oysters or if you’re trying to validate some sort of treatment method, the old way of testing these bacteria in oysters just isn’t very practical because it’s pricy and takes about a week,” said Anita Wright, a UF food science professor whose Florida Sea Grant work is validating and expanding applications of the new test for seafood processing and research purposes.

This USDA-funded research evaluates treatments such as freezing, high pressure, irradiation, or mild heating, and is funded by the Florida Gulf Coast Oyster Industry Council.

Wright will present findings from her work at the Oct. 17-23 biennial meeting of the Interstate Shellfish Sanitation Conference, followed by a workshop to demonstrate the methodology. Her findings will also be published in the next issue of the American Organization of Analytical Chemists.

The ISSC is a shellfish regulatory cooperation that will determine if the test is reliable enough to be used industrywide. If approved, the test could be an especially big boon for oyster harvesters in the Gulf of Mexico, the source of a third of all U.S. oysters.

Warmer water temperatures and factors such as pollution make Vibrio species a major concern for Gulf-harvested shellfish. Forty percent or more of Gulf oysters carry these pathogens in the “non-r” months, according to the FDA.

Provided by University of Florida (news : web)

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