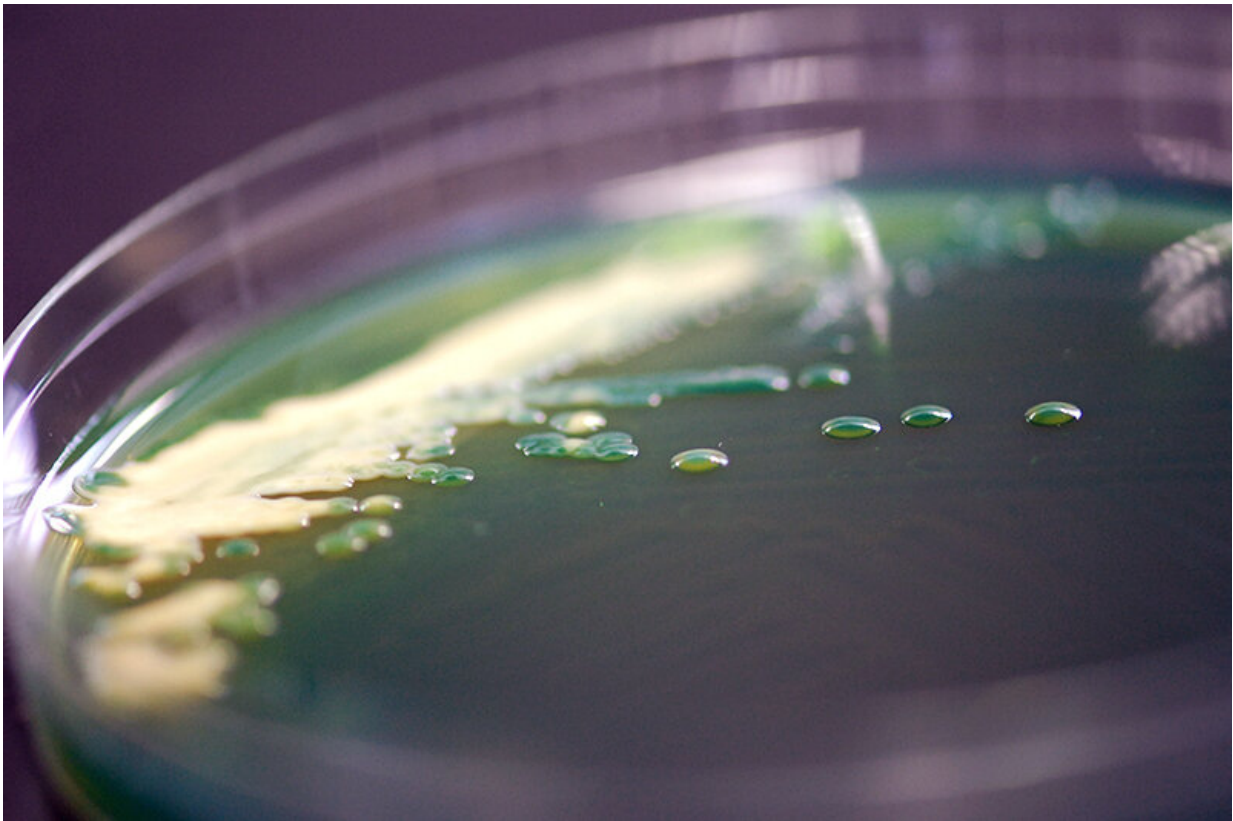


Survey uncovers diversity of *Vibrio* in prawns bought in the UK

October 5 2021



Vibrio alginolyticus. Credit: Quadram Institute

Quadram Institute researchers have carried out a survey of prawns in the UK for *Vibrio* bacteria, in an effort to understand the bacterium's potential contribution to human disease and its resistance to antibiotics.

They found that whilst 46 percent of [prawns](#) were contaminated with Vibrio, the specific strains of bacteria identified found pose no immediate risk to food safety as they do not cause severe disease in humans. Furthermore, contamination was far lower in cooked prawns.

However, the study calls for better future surveillance to protect the public against increased risk of contamination driven by [climate change](#), which could introduce more dangerous types of Vibrio into the UK's food chain.

Vibrio bacteria are commonly found in estuary or [marine environments](#) and include a large number of diverse [species](#). Most species are harmless, as was the case with those identified in this study, but some can cause mild to severe gastroenteritis through eating contaminated seafood. They can also cause wound infections through exposure to contaminated water.

This survey gives the first overarching look at the genomic diversity of Vibrio in prawns available at retail. Previously, studies had focused on individual Vibrio species or looked specifically for the genes known to cause disease. The approach provides a much broader overview, offering a sound basis for public health authorities to assess the degree of risk to the consumer. Researchers collected over 200 different fresh and frozen prawn samples from a variety of retail sources of different sizes and locations. The research was supported by the Food Standards Agency and the Biotechnology and Biological Sciences Research Council (BBSRC), part of UKRI.

The Vibrio bacterial DNA derived from each sample was subjected to Whole Genome Sequencing (WGS). This reveals the entire genetic code, and allows the Vibrio to be classified at the species, strain and variant levels. It can also be used to identify genes that are associated with disease and resistance to antibiotic drugs.

Their findings, published in the journal *Microbial Genomics*, show the diversity of *Vibrio* species present in prawns consumed in the UK. In all, a third of prawns carrying *Vibrio* had multiple species, or diverse strains of the same species, identified.

The use of antibiotics is a common practice in prawn farming, and antibiotic resistance genes were identified in 77 percent of *Vibrio* from this study, with some resistant to multiple drugs of importance to protecting human health.

The method of processing had an impact on the presence of *Vibrio*. For example, shell-on prawns were more commonly found with *Vibrio* than peeled prawns, while contaminated samples were mainly confined to raw prawns, confirming that cooking was effective at minimizing risks to food safety. However, the presence of *Vibrio* on a small number of cooked samples shows some routes still open to contamination, but these were not strains linked to foodborne disease.

Scientists are already studying *Vibrio* as likely sentinels of climate change, as they are affected by water temperatures and sea level rises. This could have an impact on the profile of *Vibrio* strains prevalent in the environment where prawns are grown and harvested. Globally, *Vibrio* infections are on the rise and they follow a seasonal pattern attributed to an increase in sea temperatures.

With the UK importing the vast majority of its prawns from abroad, this ongoing research will be critical to monitor any arrival of more dangerous strains. The diverse *Vibrio* population in prawns uncovered by this study demonstrates how WGS can be used to track trends and trace emerging and potentially dangerous strains in our food system.

"Through this survey, we found prawns purchased at retail in the UK carry a diversity of *Vibrio* species and antibiotic resistance genes"

commented Dr. Nicol Janecko from the Quadram Institute.

"The survey has not only provided clarity into the current level *Vibrio* contamination in prawn products in the UK, it has created a framework to direct further efforts into protecting food safety as we move into the future."

More information: Nicol Janecko et al, Whole genome sequencing reveals great diversity of *Vibrio* spp in prawns at retail, *Microbial Genomics* (2021). [DOI: 10.1099/mgen.0.000647](https://doi.org/10.1099/mgen.0.000647)

Provided by Quadram Institute

Citation: Survey uncovers diversity of *Vibrio* in prawns bought in the UK (2021, October 5) retrieved 12 May 2024 from <https://phys.org/news/2021-10-survey-uncovers-diversity-vibrio-prawns.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.