



Researchers think that COVID-19 originated from an animal reservoir

A recently published article in the American Journal of Tropical Medicine and Hygiene suggests naturally infected bats and pangolins (scaly anteaters) are the likely cause of the COVID-19 pandemic.

The authors stated that although the specific mechanism for how it emerged in humans remains unknown, a large body of evidence suggests that the new virus, SARS-CoV-2, evolved directly or indirectly from a sarbecovirus (SARS-like virus) group of viruses that naturally infect bats and pangolins in Asia and Southeast Asia,

The report states that for decades, scientists have warned that such sarbecoviruses are poised to emerge, have identified risk factors, and argued for enhanced pandemic prevention and control efforts. It claims that few such preventive actions were taken, resulting in the latest coronavirus emergence.

The report concludes that “in addition to controlling the COVID-19 pandemic, we must undertake vigorous scientific, public health, and societal actions, including significantly increased funding for basic and applied research addressing disease emergence, to prevent this tragic history from repeating itself”.

The first SARS outbreak in 2002-04 disappeared fairly quickly and the article quotes a 2007 warning from scientists who studied the virus at the time, which they claim went largely unheeded. Like COVID-19, the first SARS outbreak was known for causing severe acute respiratory syndrome. SARS was first identified in Foshan, Guangdong, China, in November 2002. It infected more than 8,000 people in 29 different countries and territories, causing at least 774 deaths. The World Health Organization declared the first SARS pandemic on July 5, 2003, with the last cases reported in 2004.

In 2007, the scientists who studied the first SARS pandemic described the large reservoir of SARS-like viruses in horseshoe bats as being like “a time bomb”. They warned at the time that “the possibility of the re-emergence of SARS and other novel viruses, should not be ignored.”

Seafood implicated in *Vibrio parahaemolyticus* and Hepatitis A in South East Asia and China

Researchers have provided insights into *Vibrio parahaemolyticus* infections in the UK, finding the majority of cases were isolated from people returning from South East Asia.

Scientists analysed archived *Vibrio parahaemolyticus* strains isolated from domestic infections and travellers into the UK from 2008 to 2018 from the Public Health England (PHE)’s Gastrointestinal Bacteria Reference Unit. A total of 48 strains were retrieved from the PHE strain collection which illustrates the relatively low levels of infection in the UK. Whole Gene Sequencing analysis showed a large genetic diversity with sequence type 3 (ST3) the most common with almost half of the 48 analysed strains.

Globally, *Vibrio parahaemolyticus* is the most prevalent food-poisoning bacterium associated with seafood consumption but the epidemiology of the infections in the UK was not known.

As discussed in previous micro bulletins, there is growing concern that climate warming may be increasing the clinical risk of this pathogen in traditionally non-endemic areas such as Europe. Infections are typically rare and sporadic but outbreaks have been reported.

Meanwhile an increase in hepatitis A infections in a Chinese province earlier this year has been attributed to eating raw or undercooked seafood.

In February 2020, there was a 138 percent increase in hepatitis A infections reported to the National Notifiable Disease Report System (NNDRS) from Liaoning Province compared with February 2019, and more than three quarters of cases in Liaoning were from two coastal cities — Dalian and Dandong. These cities are on the Liaodong Peninsula where seafood is abundant. From November to April, many types of fresh seafood are sold and consumed by residents, and most eat raw seafood.

All cases were sporadic. Through a survey of affected people and a case-control study, researchers found that consuming raw or undercooked seafood, clams, snapping shrimp, and oysters was significantly associated with the increase.

The researchers suggested several mitigation measures such as health education measures to avoid eating raw or undercooked seafood, and an enhanced immunisation programme with the Hepatitis A vaccine.

Study quantifies impact of foodborne illness in the UK

A study published in the British Medical Journal Open Gastroenterology has revealed that there are 180 deaths per year in the United Kingdom caused by foodborne diseases from 11 different pathogens.

The Food Standards Agency (FSA) estimates that about 2.4 million cases of foodborne illness occur every year in the UK with foodborne *norovirus* projected to cause 56 deaths per year, *Salmonella* 33 deaths, *Listeria monocytogenes* 26, *Clostridium perfringens* 25, and *Campylobacter* 21. These 5 pathogens are responsible for 98% of all fatalities, most of which occur in those aged 75 years and older.

Health Protection Scotland publish annual report

The Health Protection Scotland (HPS), have published their annual surveillance report on bacterial, protozoal and viral outbreaks of infectious intestinal disease in 2019.

Four domestic outbreaks of STEC were reported involving three different serogroups; two outbreaks of *E.coli* O157, one of O26 and one of O125. The *E. coli* O26 was the largest outbreak which affected 15 people and was linked to the consumption of salad leaves.

There were four outbreaks of *Salmonella* in 2019, involving different serotypes: *S java*, *S mikawasima*, *S bredeney* and *S agona*. All four were part of United Kingdom-wide outbreaks.

Although (as in the rest of the UK) *Campylobacter* is the main bacterial cause of infectious intestinal disease, no outbreaks were identified in 2019, highlighting that most cases are sporadic. This is similar to the trend seen in recent years with only one such outbreak reported in the previous five years.

Outbreaks of *Listeria* are rare in Scotland. In 2019, there was one case, which was part of a larger UK outbreak. The mode of transmission was believed to have been foodborne although the suspect food source was not identified.

Salmonella risks associated with dried herbs and spices – Irish study

In previous bulletins we have reported on how *Salmonella* can survive and remain viable in dried low water activity foods and further evidence of this has emerged in a recently published study in Ireland.

Between August and the end of November 2017, the Food Safety Authority of Ireland (FSAI), Environmental Health Service and Official Food Microbiology Laboratory Group of the Health Service Executive (HSE) investigated the microbiological safety of dried herbs and spices. The report is now available.

In total, 855 samples were collected, mostly at retail, by environmental health officers (EHOs) who were asked to find out if dried herbs and spices had been irradiated. A total of 64 samples gave results which were out of specification (OOS) and the survey showed only five of these OOS samples had been decontaminated using irradiation. It is an approved treatment in Europe to control pathogens such as *Salmonella* in these products. The FSAI stated that the lack of irradiation highlights the importance of good hygienic conditions.

Dried herbs and spices have low water activity that inhibit pathogens from growing but some microorganisms (especially *Salmonella*) can remain in a viable state and survive. Although the most common use for these products involves a thermal kill step, they can be eaten raw or used as ingredients in ready-to-eat foods such as salads or as garnishes.

Salmonella was detected in 4 out of 790 samples which were analysed. *Salmonella Infantis* was detected in dill and *Salmonella* with unknown serotypes were found in basil, ginger and coriander powder.

The basil and dill were imported from Egypt, the ginger from Poland, and the country of origin for the coriander was unknown.

Recommendations based on the FSAI survey include a requirement for businesses to source dried herbs and spices from reputable suppliers who can provide evidence of adequate hygiene controls during production and processing.

Toxoplasmosis in venison – Scottish survey

A study on the presence of *Toxoplasma gondii* in retail meat in Scotland has highlighted venison as potentially high risk.

Toxoplasma gondii DNA was detected in 48 of 149 venison samples over two sampling periods. Consumption of undercooked meat is a known risk factor for toxoplasmosis infection.

Findings could be used to inform quantitative microbial risk assessments of foodborne toxoplasmosis in Scotland, according to the study published in the Journal of Food and Waterborne Parasitology.

Of the 300 meat samples purchased for testing in the first sampling period, 39 were positive for *Toxoplasma gondii* DNA. It was detected in one of 21 chicken samples, six of 87 lamb samples, and 29 out of 82 venison samples. Some venison products in the first sampling period also contained pork. Of the 67 pure venison samples purchased in the second sampling period, 19 were positive for *Toxoplasma gondii* DNA.

Antibodies to *Toxoplasma gondii* were detected 19 out of 128 venison samples.

An average of 365 toxoplasmosis cases are clinically diagnosed in England and Wales each year and 33 infections are recorded annually in Scotland.