

A doctor working to find a simple, inexpensive test for the dangerous Zika virus, says it is certain to hit Hong Kong, writes **Kate Whitehead**

A

British doctor helping spearhead the first crowdfunded campaign to develop a diagnostic test for the Zika virus has warned Hong Kong and China to be on the alert for the extremely dangerous virus.

"It's not a question of if, it's a question of when it's coming to Hong Kong and mainland China," says Dr Alexander Kumar, one of a handful of scientists working voluntarily on a project in Brazil to create an effective and affordable test for the Zika virus.

The virus was first isolated from monkeys living in the jungle in Uganda in 1947 and in 1954 the first official case in a human was registered in Nigeria. There was cause for little concern previously, Zika was regarded as a mild virus causing a slight rash and fever and having no long-term complications. But all that changed last year. According to the World Health Organisation's most recent update, Zika is present in 52 countries – and it's much more dangerous.

In Brazil, the country hardest hit, the virus has been linked to 641 cases of microcephaly, which causes shrunken brains in children. It has also been linked to a rare autoimmune disease called Guillain-Barré syndrome.

"Guillain-Barré syndrome is a progressive paralysis, to the point that it stops you from breathing. Unless you have intensive care facilities you die and it can leave you with extreme neurological defects," says Kumar, a British doctor who recently completed a tropical medicine specialist training diploma course at the London School of Hygiene and Tropical Medicine.

So far Asia is believed to be free of Zika, but that could soon change. *Aedes aegypti* is the name of the mosquito species that transmits the Zika virus. It's the same mosquito that transmits dengue fever and



VIRAL STATISTIC

A baby with microcephaly in Paraíba state, Brazil. Photo: AP

chikungunya, viruses that cause fever and severe joint pain.

Another mosquito species – *Aedes Japonicus* – has recently been associated with Zika. Both species are found in Asia.

"All you are doing is waiting for Zika to spread. And bear in mind that we live in an age when things spread faster than they ever have before with people travelling by plane," says Kumar.

Currently, diagnosis can only be confirmed by slow, expensive and relatively rare laboratory testing for the presence of the ZIKV genome in the blood or other body fluids, such as urine or saliva. There is a problem of cross reactivity with other viruses in some lab tests, making it hard to distinguish infection with the Zika virus and dengue fever. Patients with other viral infections including dengue and chikungunya are proposed to increase the likelihood of microcephaly and neurological complications, he says.

While the world is concerned about the threat of an explosive pandemic posed by Zika, and

funding and initiatives are urgently under way, bureaucratic red tape means they can be slow off the mark. The advantage Kumar and colleagues have for their project is they are a relatively small team and travelling light.

"We are the only international team on the ground here. You would expect more people to be around," Kumar says by Skype from Pernambuco state in Brazil, one of the main epicentres of the Zika virus.

The team is working fast to try to produce a simple and affordable test for the virus – one that non-medics could use in very basic conditions in remote locations. Within three days of launching their crowdfunding campaign on experiment.com, they reached their US\$6,000 goal. Because they offered their time for free and kept their costs to a bare minimum, that money has been enough to get the project off the ground.

"It's not for profit. I'm here on annual leave. We've been kindly hosted by the LIKA laboratory in Brazil and we have no overheads. Our aim is

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DR ALEXANDER KUMAR (LEFT)



disruptive innovation – we've undercut everything. Our costs are so low that we don't need a lot of money to do this," says Kumar, whose normally works as an academic clinical fellow in infectious diseases at the University of Leicester in Britain.

A second phase of funding has been launched to raise US\$15,000 to continue their work. Within the next week they will begin doing the proof of concept, then further clinical tests; then an advisor who is the head of innovation for Unicef will help replicate the test across Brazil to try it out in the field.

"I've always been interested in inequality and working out how we can change that. We hope to have the proof of concept within three months – that is very fast," says Kumar.

If it is a success and is widely produced, Hong Kong may need to use it – should the virus make its way here.

"Tropical and emerging and infectious diseases, like most of the flus that hit the world, are generated on the Vietnamese-Chinese border, where people

live in close proximity to pigs and ducks. China should have good preparation for emerging infections," says Kumar.

There are a number of theories as to why the Zika virus has flared up now and with such devastating effects. One idea is it is the result of the introduction of genetically modified mosquitoes.

It may seem the stuff of science fiction, but a British-based biotechnology company Oxitec did this in 2012 to tackle the spread of dengue fever and malaria. The "sterile" insects were released in Brazil, Malaysia, India and the Cayman Islands to drastically reduce the population of *Aedes aegypti*, but critics say this may have disrupted the ecosystem and done more harm than good.

There is no cure yet for Zika. Epidemiology is the first step. Pregnant women will be tested, and if the result is positive they can have a scan to check the viability of the pregnancy.

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To donate to the campaign or find out more go to <https://goo.gl/0Y8Boc>



A military reservist fumigates a home as part of the measures against the Zika virus and other mosquito-borne diseases in Havana, Cuba. Photo: Reuters

HEALTH BITES

An apple a day keeps death at bay

Eating a large apple a day can help keep heart attack and stroke away, according to a seven-year study of half a million adults in China by the University of Oxford and Chinese Academy of Medical Sciences. The study, which covered 10 urban and rural localities across China, tracked the health of people who did not have a history of cardiovascular disease or anti-hypertensive treatments at the start of the study.

A 100-gram portion of fruit per day (about one large apple) was associated with about one-third less cardiovascular mortality and the association was similar across different study areas and in both men and women.

"The association between fruit consumption and cardiovascular risk seems to be stronger in China, where many still eat little fruit, than in high-income countries where daily consumption of fruit is more common," says study author Dr Du Huai-dong of Oxford.

The study was published in the *New England Journal of Medicine*.



Bilingual baby brains show increased activity before they talk

Two languages are better than one when it comes to training your child's brain for problem-solving, shifting attention and other desirable

cognitive traits, according to a study that looked at 11-month-old babies from English-Spanish households.

"Our results suggest that before they even start talking, babies raised in bilingual households are getting practice at tasks related to executive function," says Naja Ferjan Ramirez, lead author and a research scientist at the Institute for Learning & Brain Sciences at the University of Washington. "This suggests that bilingualism shapes not only language development, but also cognitive development more generally."

Many brain studies show that bilingual adults have more activity in brain areas associated with executive function – actions that help us organise, evaluate and act on information received from our environment – than monolingual adults, but these new findings reveal the difference is evident from a young age.



Food labels should reveal exercise needed to burn off calories

Food should be labelled with the equivalent exercise needed to expend its calories to help people change their behaviour, argues an expert in a recent issue of *The BMJ*. Shirley Cramer, chief executive at the Royal Society of Public Health in Britain, says giving consumers an immediate link between a food's energy content and physical activity might help reduce obesity.

She suggests symbols could show the minutes of several different physical activities that would use the equivalent amount of calories to those contained in the product. For example, the calories in a can of fizzy drink take a person of average age and weight about 26 minutes to walk off.

"The objective is to prompt people to be more mindful of the energy they consume and how that relates to activities in their everyday lives, and to encourage them to be more physically active," says Cramer.

Public polling by the society has shown that almost half (44 per cent) of people find current information confusing, she writes. And more than half (53 per cent) say that they would positively change their behaviour as a result of viewing activity equivalent calorie information, including choosing healthier products, eating smaller portions or doing more physical exercise.

Jeanette Wang



The secret to Okinawan longevity

Sponsored Feature

Fucoidan, a natural food compound found in brown algae, is being used by the healthcare industry to fight serious illnesses with promising results.

Okinawa is famous for its high concentration of centenarians. The island also boasts the lowest mortality rate by cancer in Japan. Apart from a healthy lifestyle, there might just be something in the Okinawan water that contributes to their secret recipe to longevity.

Kanefuku Co. Ltd., founded in 1971, is a reputable seafood supplier and dietary supplement producer from Japan. The death of its founder from bile duct cancer prompted his son and current CEO Mr. Takeuchi to look to the ocean to find ways to help fight this dreadful disease. With a research team headed by Dr. Daisuke Tachikawa, Vice President of Wakamiya Hospital in Oita, Japan, the company exploited the disease fighting and immunity boosting properties of fucoidan, and formulated a series of health supplements to aid the fight against cancer.

How fucoidan works

Apoptosis refers to the process of genetically programmed cell death. Malignant cells, however, has the ability to evade apoptosis. Fucoidan is able to deliver a stimulus to these cells to trigger their self destruction. Secondly, fucoidan can also block the generation of new blood vessels that carry nutrients and oxygen to malignant cells, preventing them from further growth and metastasising to other parts of the body.

The immune system plays a central role in safeguarding our health. Fucoidan, a sulfated polysaccharide, stimulates intestinal immunity and activates the immune system by aiding "T cells", a form of white blood cells, to attack unhealthy cells.

Proprietary formulation

Umi no Shizuku, a series of fucoidan supplements produced by Kanefuku, is formulated with a proprietary mix of Fucoidan from Okinawa Mezuku Mekabu and Agaricus blazei mycelia extract from

mushrooms, creating a synergistic effect that has been shown to deliver tremendous health benefits among patients and those recovering from serious illnesses. Patients' testimonial reported improvements in health, as well as the lessening of side effects caused by medical treatments.

Fucoidan is not meant to replace medical treatments but serves as an aid, or alternative to those for whom traditional treatment options are limited. Dr. Tachikawa, who has extensive experience treating cancer patients, believes in the merit of alternative supplement in improving patients' quality of life.

He said: "The word ku-su-ri (meaning 'drug' in Japanese) reads backwards as ri-su-ku ('risk'). Anticancer drugs also involve risk, and medical professionals must face the fact that many cancer patients fall ill because of the anticancer drugs they are taking. I am recommending Fucoidan to those patients who cannot undergo surgery or take anticancer drugs."

First launched in Japan in 2000, Umi no Shizuku fucoidan is now available in 45 countries via 10 worldwide offices. The FDA-approved, 100% natural product has achieved cGMP (Current Good Manufacturing Practices) standards that specifically apply to the production of dietary supplements. It comes in powder, capsule and liquid forms in varying dosages to suit different health needs. A detailed consultation directly with the company is given before any new purchase.



Fucoidan Drink Type



Fucoidan Capsule Type



Fucoidan Powder Type

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