Bacteria and the bees: Antibiotics work better with honey

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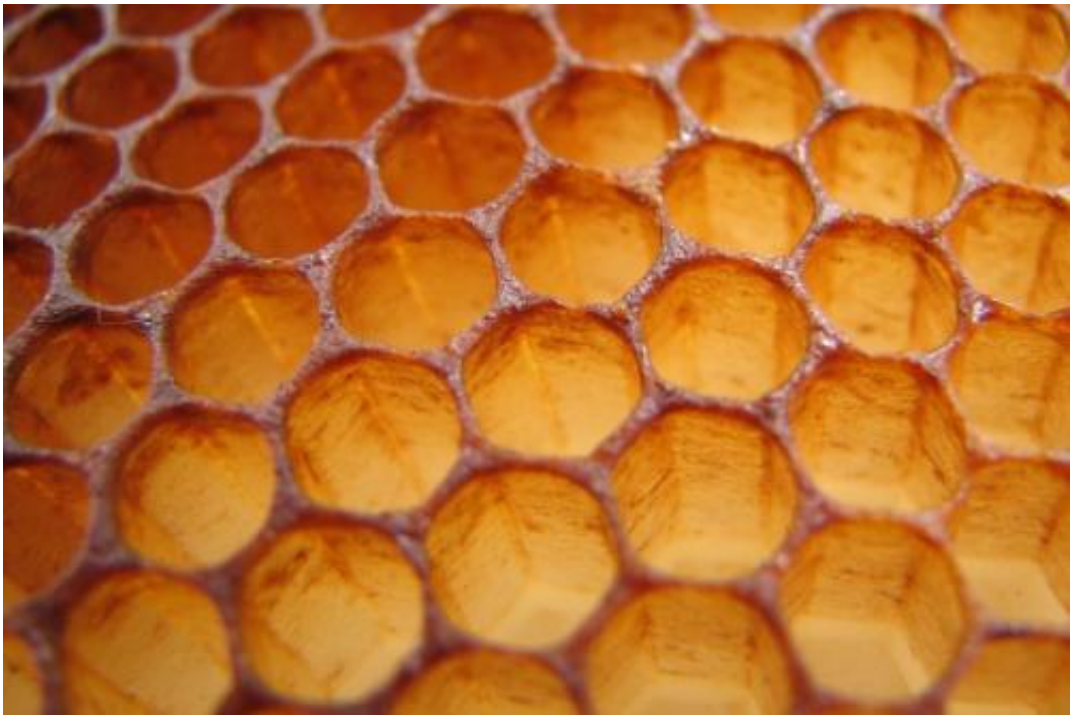

Honeycomb. Credit: justus.thane via flickr

Medical-grade manuka honey (Medihoney), when used together with antibiotics, can both improve the effectiveness of the antibiotics and can prevent the emergence of resistance, according to new findings by UTS researchers. The findings suggest it could be a new weapon in the fight against drug-resistant bacteria such as the superbug MRSA (golden staph).

New Zealand manuka honey is known to have potent broad-spectrum antibacterial activity and the researchers from the ithree institute at UTS have previously shown its value in the treatment of infected chronic wounds and serious skin infections.

New research, published on Friday in the open-access science journal PLOS ONE, demonstrates the benefits of using Medihoney in combination with a well-known antibiotic, rifampicin, in the effective treatment of skin and chronic wound infections, according to Professor Liz Harry.

"The combination of medical grade antibacterial honey with the antibiotic, rifampicin, that is routinely used to prevent or treat chronic wound infections, is more effective at killing the bacteria methicillin-resistant Staphylococcus aureus (MRSA) than each treatment alone. Our ground-breaking research shows that the combination of this medical grade honey with rifampicin is actually more than additive - it is synergistic," Professor Harry said.

"We and others have shown that bacteria do not become resistant to honey in the laboratory. Consistent with these facts, we also found that if MRSA were treated with just rifampicin, the superbug became resistant very quickly.

"However when Medihoney and rifampicin are used in combination to treat MRSA rifampicin-resistant MRSA did not emerge. In other words, honey somehow prevents the emergence of rifampicin-resistant MRSA – this is a hugely important finding.

"Our results support the idea that treatment of infected chronic wounds with rifampicin and Medihoney offers several benefits including more effective eradication of the infection, reduction of the effective dose of rifampicin, which reduces possible side effects and a reduction of the

risk of antibiotic resistance both in the short term and long term," she said.

Rifampicin is often a first choice drug for health workers treating chronic wound infections. However, bacteria that are resistant to this drug so easily arise that it is always used in combination with other antibiotics to reduce or slow down resistance.

The research, conducted at the ithree institute at UTS in collaboration with New Zealand natural health company Comvita that makes Medihoney and the School of Molecular Bioscience University of Sydney, has implications for the way manuka honey can be used in future medical and hospital practice.

Manuka has several properties that make it particularly valuable as a treatment for chronic wounds. These include high levels of methylglyoxal (MGO) and its ability to inhibit the growth of a wide range of bacteria and hydrogen peroxide, present in many honeys, including manuka, at varying concentrations. It is therefore currently the primary honey used in registered medical devices for wound care.

Honey has been seen as somewhat of an 'alternative' medical approach.

"Our research provides solid scientific evidence for the use of honey as a first choice option in the treatment of chronic wounds," said Professor Harry.

"It's gaining momentum and it may not be long before it is routinely incorporated into future medical and hospital practice. Honey dressings in all types of formats are available and are economical to use routinely."

More importantly she claims this research also offers an exciting new avenue to helping to curb the emergence of antibiotic-resistant strains of

bacteria that are a fast growing problem for the medical community.

The research paper can be read in full here.

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