

Plastics used to fix teeth could help prevent spread of disease

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(PhysOrg.com) -- Researchers at Cranfield University have designed tiny particles that stop bacteria from communicating with each other in a bid to prevent spread of infection and disease.

Using similar plastics that dentists use to correct misaligned teeth, the Cranfield Health team has developed polymers that absorb the bacteria's signal to attack so they are fooled into 'thinking' their numbers are low and don't switch to a more dangerous state. By removing the signal molecules the bacteria isn't killed but instead it makes it much more difficult for them to develop a resistance to drugs and therapies.

The ability to disrupt bacterial communication, therefore preventing the bacteria from releasing toxins or forming sticky, drug-resistant layers (biofilms), is an important target for new medical treatments. It is generally accepted that biofilms are responsible for 70% of all human infections so new preventative measures are urgently needed.

Based on a type of 'smart' plastic, unlike expensive antibodies, which can be made to do the same job, these polymers can be synthesised in bulk using cheap raw materials. It is possible to foresee that these polymers when prepared in powder format could be easily integrated into traditional [wound dressing](#) materials or, when the [particles](#) are packed into capsules, they could be delivered directly to the gut in order to treat bacterial infections.

Dr Elena Piletska, who has pioneered this work, said: "The polymers

which we described are not expensive and could be prepared in large quantities. It is difficult to say when these materials will be commercialised and in general use. I hope that one day they will be a part of common practice for the treatment of gut and wound infections, or become an important ingredient for mouthwash or even [chewing gum](#) in oral care. We have already obtained a ‘proof of concept’ for this technology but further development would require the investment and support to fulfil this potential highly innovative technology. The interest and commitment of the pharmaceutical industry could make all the difference.”

Provided by Cranfield University

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