# New polymer research could boost probiotics industry

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A protective delivery vehicle that shuttles friendly bacteria safely through the stomach to the intestines could provide a major boost for the probiotics industry. The new technology could also be used for the delivery of certain drugs and even increase calcium absorption, according to research presented at the Society for General Microbiology's Autumn Conference at the University of York this week.

The probiotic industry is worth £200 million a year in the UK. Probiotic foods contain live beneficial bacteria and may help maintain and improve gut health, strengthen immunity, fight gastro-intestinal and respiratory disorders and even show anti-tumour effects. One of the challenges for manufacturers of probiotic foods is getting high enough numbers of these bacteria into the intestines; most perish under the heavy acidic conditions of the stomach. Scientists from the University of Wolverhampton led by Dr Iza Radecka, have now found a solution to this problem by developing a special type of biopolymer that protects probiotic bacteria in the stomach and delivers them safely to the intestines where they can get to work.

The novel biopolymer is completely biodegradable and is able to remain intact in the stomach and continue to the intestine, where it disintegrates, releasing the bacteria. The researchers showed that beneficial bacteria including Lactobacillus and Bifidobacteria strains were able to survive in a simulated gastric juice solution for up to four hours when they were coated with the polymer. Bacteria that did not have this coating only survived for two hours. "Our research uses a novel biodegradable, edible

and non-toxic biopolymer to protect bacteria during storage and after ingestion so that consistent numbers of live and viable friendly bacteria can be administered via food products," explained Dr Radecka.

The researchers believe their findings could have a major impact on the probiotics industry. "There is an ongoing debate about the usefulness of probiotics. Some data showing positive effects is irreproducible and one of the reasons for this could be insufficient numbers of live bacteria reaching the intestine. A product that delivers a consistent number of bacteria to the intestine is therefore essential," said Aditya Bhat, who is carrying out the research and is presenting the group's work. "This will hopefully lead to better quality probiotic food products that can be used to prevent or control gastro-intestinal, dental or respiratory disorders."

The new biopolymer also has the potential for clinical applications outside of the probiotics industry, suggested Aditya "A variation of this polymer can be used to increase calcium absorption in the intestine that would help maintain healthy bone structure and condition. Also, it looks feasible for the polymer to be used for administering unstable drugs that disintegrate in the gastro-intestinal tract," he said.

Provided by Society for General Microbiology