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Contact: Tony Trueman

t.trueman@bath.ac.uk

44-122-538-4220

[University of Bath](#)

New device could cut chemotherapy deaths

A new method of delivering chemotherapy to cancer patients without incurring side effects such as hair loss and vomiting is being developed.

The method, produced at the University of Bath, England, involves using tiny fibres and beads soaked in the chemotherapy drug which are then implanted into the cancerous area in the patient's body.

These fibres are bio-degradable and compatible with body tissue, which means they would not be rejected by the patient's body. They gradually turn from solid to liquid, releasing a regular flow of the chemotherapy chemical into the cancer site, and a much lower dose to the rest of the body.

This is a more localised way of killing cancer cells than the current method of injecting the chemical into a cancer sufferer's vein so that it is carried around the body.

As well as reducing the side-effects, the new drug delivery vehicle, known as Fibrasorb, could also cut the numbers of patients who die from the effects of chemotherapy because they need such high doses to tackle their cancer.

The method, developed by Dr Semali Perera, of the University's Department of Chemical Engineering, over the past few years, has successfully gone through preliminary laboratory trials. The first clinical trials on volunteer patients with ovarian cancer in Avon, Somerset and Wiltshire could begin in the next few years and, if successful, the technology could be put into general use.

The research team at Bath is collaborating closely with the Avon, Somerset and Wiltshire Cancer Centre and the oncology team at the Royal United Hospital for the design and development of these drug delivery vehicles. This team includes Dr Ed Gilby,

one of the most experienced consultant oncologists, surgeons Mr Nicholas Johnson and Mr Kenneth Jaaback, clinical trials experts and specialist nurses such as Tracie Miles.

"Side effects from chemotherapy can be very unpleasant and sometimes fatal," said Dr Perera.

"The new fibres and beads could cut out some side-effects entirely, including nausea and vomiting, and could reduce the number of people who die each year.

"Although the first study will be on patients with ovarian cancer, soon we hope that other cancer sufferers with solid tumours will benefit.

"Give that around one in eight people worldwide die of cancer, this could be a vitally important step in the treatment of this disease.

"We have now assembled an extremely experienced team to develop the Fibrasorb technology."

The Fibrasorb technology is a flexible fully resorbable device that can be formulated as a bead, a fibre or mesh, or as a tube put into the body which leads outside the body and through which drugs can be fed.

For the pre-clinical studies, funded by the Department of Health, Dr Perera will be working closely with Dr Vasanta Subramanian, a lecturer in the University's Department of Biology & Biochemistry. Dr Subramanian is a cell and molecular biologist with extensive research experience in gastrointestinal cancers and stem cells in the gastrointestinal tract.

Dr Perera has also been working with the University's Department of Pharmacy & Pharmacology to make the fibres more sterile so they cannot be attacked by harmful bacteria.

Dr Perera said that other researchers had worked on using tiny beads as a way of delivering drugs locally, but the new system showed greater promise because it could achieve better control when delivering the drug.

A patent application has been filed on the drug delivery system, and drug companies across the world are expected to express great interest in the new technology. Dr Perera

has been working closely with David Coleman and Jennie Solb from the University's Research Innovation Services department, to develop this technology. Her students, who have made a valuable contribution to the project, include Chin Chi Tai, Christopher Campbell and Ian Lee.

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