Soil bacteria helps kill cancers

By Caroline Parkinson Health editor, BBC News website

A bacterium found in soil is showing promise as a way of delivering cancer drugs into tumours.

Spores of the Clostridium sporogenes bacterium can grow within tumours because there is no oxygen.

UK and Dutch scientists have been able to genetically engineer an enzyme into the bacteria to activate a cancer drug.

Experts said it would be some time before the potential benefits of the work - presented to the Society of Microbiology - were known.

The work is being presented to the society's autumn conference at the University of York.

The spores grow only within solid tumours, such as breast, brain and prostate tumours and not in other tissue in the body, where oxygen is present.

Healthy tissue 'unscathed'

Researchers have been investigating the possibilities of clostridium "vectors" to deliver cancer drugs for decades.

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“Start Quote

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End Quote Professor Nigel Minton University of Nottingham

The scientists from the University of Nottingham and Maastricht University were able to genetically engineer an improved version of an enzyme into C.sporogenes.

In animal tests, a drug was also injected into the bloodstream which becomes active only when it is triggered by this enzyme.
It then destroys only the cells in its vicinity - the tumour cells.

Professor Nigel Minton, who led the research, said: "Clostridia are an ancient group of bacteria that evolved on the planet before it had an oxygen-rich atmosphere and so they thrive in low oxygen conditions.

"When Clostridia spores are injected into a cancer patient, they will only grow in oxygen-depleted environments, ie the centre of solid tumours.

"This is a totally natural phenomenon, which requires no fundamental alterations and is exquisitely specific.

"We can exploit this specificity to kill tumour cells but leave healthy tissue unscathed."

The team are now planning to work with other researchers on patient trials, due to start in 2013.

Nell Barrie, senior science information officer at Cancer Research UK, said: "Finding ways to target treatments to cancer cells while leaving healthy cells unharmed is a key aim of researchers around the world.

"But it's a difficult problem to solve, especially because every cancer is different. This particular approach hasn't yet been tested in patients so it will be some time before researchers know whether it will offer real benefits."