Bacteria discovery could lead to antibiotics alternatives

May 3 2012

Scientists have discovered an Achilles heel within our cells that bacteria are able to exploit to cause and spread infection.

The researchers say their findings could lead to the development of new anti-infective drugs as alternatives to antibiotics whose overuse has led to resistance.

University of Manchester researchers studied *Listeria* – a potentially deadly group of bacteria that can cause listeriosis in humans when digested – and found they are able to spread infection by hitching a ride on a naturally occurring protein called calpain.

"Bacteria produce a number of chemicals that allow them to invade a host and to establish an infection," said lead researcher Dr David Brough, who is based in Manchester's Faculty of Life Sciences.

"The chemicals produced depend upon many factors, such as the species of bacteria, the type of host, and also whether the infection grows inside or outside a cell.

"We have investigated the growth of *Listeria*, a pathogenic bacterium that grows inside cells. An essential step for its growth, and thus the infection, is the bacteria's ability to move from within one compartment in a cell to another.

"We discovered that in order for this particular type of bacteria to move

and to grow some of the host cells biology is exploited, a protein called calpain. Without calpain the bacteria cannot move within the cell and so do not grow.

"This discovery highlights the possibility of using drugs against these host proteins to block infections, potentially reducing the need to use antibiotics."

The study, funded by the Wellcome Trust, is published in the *PLoS ONE* journal.

Provided by University of Manchester