Salmonella Breakthrough Offers Hope for Vaccine

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Scientists at the University of Birmingham have identified a protein present in non-typhoidal Salmonella (NTS) that could form the basis of a vaccine to protect against the infection that kills many tens of thousands in the developing world.

In research published in PNAS, researchers reveal that a protein found on the surface of NTS called OmpD, may protect against these infections when purified from the bacteria and used in a vaccine. The vaccine works by enabling the body to produce antibodies that specifically recognise OmpD and so can bind to the bacteria, blocking them from spreading through the blood. This allows the immune system to more easily see the bacteria as a threat and so stop them spreading through the blood and causing severe illness.

Dr Adam Cunningham, who led the team from Birmingham and worked with collaborators in Mexico and Cambridge, says the global impact of the breakthrough is significant: “In the Western world, gut infections caused by NTS clear up within a week or so. In the developing world, particularly in areas such as central and southern Africa, these bacteria kill many tens of thousands of infants and HIV+ adults every year.

“The presence of proteins that bind NTS in a specific way, antibodies, means that someone who has antibodies to Salmonella has a lower chance of having severe disease than someone who does not have antibodies.”

The antibody produced against the protein OmpD derive from a type of antibody producing cell, called a B1b cell, that is not typically associated with making responses to proteins. The production of this antibody by this type of cell may help explain why infants are more susceptible to NTS than adults.

Seeing whether other proteins from different types of bacteria and viruses are also recognised by B1b cells may help in the design of better vaccines against other diseases too.

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Further Media Information

Dr Adam Cunningham is available for interview. Please contact Anna Mitchell on 0121 414 6029 / 07920 593946.

Notes to Editors

Dr Cunningham’s paper is published now in PNAS.