Medical Xpress

New drug could combat killer diseases

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(Medical Xpress) -- Researchers from the University of Reading have developed a new drug which could reduce the spread of deadly diseases such as Lassa Fever and Aseptic Meningitis.

Dr Ben Neuman, in collaboration with labs in California and Oregon and AVI Biopharma of Corvallis Oregon, has designed a drug which reduces the spread of infection of a family of viruses known as arenaviruses by up to 90% in laboratory tests.

Arenaviruses are normally found in small mammals, such as rodents and bats. People can become infected after coming into contact with infected rodents that live in and around their homes.

Common in Africa, South America and North America these viruses can be fatal. The Centre for Disease Control estimates that arenavirus diseases, such as Lassa Fever, kill an estimated 5,000 people each year, mostly in the developing world. New types of arenaviruses are being discovered at the rate of about one per year.

Virus particles reproduce in living cells. When the virus has made enough copies of itself it leaves the host cell to infect other cells. The new drugs developed by Dr Neuman's group, called PPMO, work by stopping the virus from copying its own genes, thereby stopping the disease from spreading.

Dr Neuman, from the University of Reading's School of Biological Sciences, showed that three related PPMO compounds could prevent the

spread of infection from cells which were infected by four different viruses of the arenavirus family. The compounds were found to reduce the amount of virus present in the liver by over 90% following treatment.

Dr Neuman said: "The results we have so far are very promising. Cells will naturally die and be replaced relatively regularly in the body, so if the new drugs stop the viruses from reproducing, potentially the virus could eventually be eradicated from the body over time.

"But arenavirus PPMO are not a finished product yet. Before they can be approved for medical use, more work will be needed to show that they are safe and effective in larger animals and people."

If successful PPMO could be used as part of a multi-drug therapy, a strategy which is used to slow the spread of HIV and its progression to AIDS. It is also thought that PPMO could one day be given as a preventative measure to people who will be travelling to places where arenavirus infections are common.

PPMO compounds are also being developed to combat swine flu and other potentially deadly diseases such as Dengue fever and Ebola haemorrhagic fever.

Dr Neuman's research is detailed in his study entitled *Development of peptide-conjugated morpholino oligomers as pan-arenavirus inhibitors* published today, Fri 30 Sept 2011, in the journal *Antimicrobial Agents and Chemotherapy.*

Provided by University of Reading