MedicalXpress

New study on UTIs suggests flagellin is key in stimulating body's natural defences

March 15 2013

A new study by British scientists reveals that motile *Escherichia coli* isolates demonstrated significant activation of NF-κB signaling suggesting that flagellin plays a key role in up-regulating the host innate defences against urinary tract infections (UTIs).

UTIs are commonly caused by *Escherichia coli*. The host innate defences function to protect the uro-epithelium from microbial assault via a variety of mechanisms. These include NF-κB signalling pathways activated via cell-surface Toll-like-receptors responding to bacterial pathogen associated molecular patterns (PAMPs). Flagellin, a protein responsible for bacterial motility, is a key activating PAMP.

The study, conducted by a multidisciplinary team of researchers at Newcastle University in the UK, investigated the motility of 24 clinical isolates associated with UTIs and their ability to activate NF-kB. The scientists aimed to examine the relationship between flagellin expression and host response.

"Research into the causes and treatment of urinary tract infection (UTI) is vital at this time as the incidence of UTI and bacteriuria are increasing with an aging population," commented Mr. Ased Ali of Newcastle University's Institute of Cellular Medicine and the study's presenting author.

"There is rapidly growing resistance exhibited by organisms, especially *E. coli*, to conventional antimicrobials which makes infections potentially

more and more difficult to treat," he explained. "This is confounded by the fact that there have been no new classes of antibiotics to treat Gram-negative bacilli like *E. coli* for more than 40 years. It is amazing that the fluoroquinolones were the last new class of antibiotics to treat Gram-negative bacilli! Our ultimate aim is to develop agents that enhance the immune response and help the body defend itself better as an alternative to conventional antibiotics which work against the pathogen alone."

More information: A.S.M. Ali et al., "Bacterial motility and NF-κB activation by clinical isolates from urinary tract infections," First Prize, Best Abstract (Non-Oncology), 28th Annual EAU Congress, 15 to 19 March 2013; Milan, Italy; Abstract Nr: 623.

Provided by European Association of Urology