

Protein may boost body's defence system against infections and cancer

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(PhysOrg.com) -- To boost our immune system, health experts remind us to get a good night's sleep, drink plenty of fluids and eat a well-balanced diet. Researchers at McMaster University have added a new finding to the list of ways in which we can lead healthier lives.

Researchers in McMaster's Institute of Molecular Medicine and Health, Department of Pathology and Molecular Medicine, have discovered that a protein called FimH has the ability to not only fight microbial infections such as the flu, but cancer as well by boosting the body's inborn defense system.

"(FimH) has great potential as an innate microbicide, particularly against infections for which we don't have a vaccine, such as influenza," said lead author Ali Ashkar, associate professor in the Department of Pathology and Molecular Medicine.

The researchers also found FimH can be effectively added to a vaccine to enhance a person's immune response.

Our immune system defends us against infectious diseases such as viruses, bacteria and parasites that cause infectious diseases - from the ordinary flu to full-blown malaria. Traditionally, antibiotics and antiviral drugs are used to fight them.

"Another way to fight these diseases," Ashkar said, "is to empower our own defense system to deal with the infections, or cancer. This is the

basis for emerging interest in factors/molecules which can boost our very own innate defense system."

The McMaster research appears in the on-line edition of *PLOS Pathogens*, a peer-reviewed open-access journal published by the Public Library of Science.

In their paper, the researchers demonstrated the biological significance of the interaction between FimH and a set of evolutionary conserved receptors, including the Toll-like receptors (TLRs), that are found on the surface of epithelial cells at the mucosal surface.

"In the context of a natural infection, recognition of FimH by TLR4 is important for the host to mount an innate immune response against uropathogenic E.Coli (which causes 90 per cent of urinary tract infections)," the researchers said in their paper. The researchers also showed purified FimH protein induces a potent innate antiviral response, both in tissue culture and in animal models.

"Our results suggest that FimH is an excellent candidate for development as a microbicide against pathogen infection," the researchers reported in *PLOS Pathogen*.

The McMaster Industry Liaison Office (MILO) has filed a provisional US patent for the use of the FimH protein as an anti-microbial and anti-cancer agent.

Provided by McMaster University

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