

Preventing blood poisoning

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Peptide molecules derived from the body's natural immune system can help boost the body's defence against life-threatening blood poisoning, joint University research has uncovered.

In an article published in the journal *Science Translational Medicine* by Dr Anne-Catherine Raby et al, experts in infection and immunity from the University's School of Medicine led by Dr Mario Labéta, have found that peptide molecules derived from the body's natural immune sensors known as Toll-like receptors or TLRs can kick-start the body's natural

[immune defence](#) that was affected by blood poisoning.

"Blood poisoning or sepsis is triggered by the body's overreaction to infection; it can lead to widespread inflammation and blood clotting as well as, in the later stage of the illness when the [immune system](#) finally gets exhausted, to profound immunosuppression," said Dr Labéta from the School of Medicine's, Institute of Infection and Immunity.

"TLRs are a family of receptors in [immune cells](#) that are able to sense the presence of bacteria, viruses, fungi or parasites when they enter our bodies – these receptors help fire off an [immune response](#) that squelches the infection.

"However to work effectively TLRs need a partner, a co-receptor called CD14 that helps to better sense microorganisms by delivering pathogenic components to TLRs."

Using this information the team has uncovered that small peptides derived from TLRs can amplify CD14's co-[receptor activity](#) thus boosting TLRs sensing ability.

This is especially relevant for the treatment of sepsis-induced immunosuppression – where the body's natural defence mechanism is halted.

"What we've found is these peptides act like a 'middle-man' bringing the danger signals from CD14 directly and speedily to the TLRs. New research is telling us that the main reason for people dying from sepsis nowadays is from suppression of the immune system and failure to clear secondary infections.

"Therefore by boosting TLRs sensing ability through increasing CD14 activity we can help kick-start the body's defence by restoring the body's

natural immune response against microorganisms and potentially help prevent the pathological consequences of [blood poisoning](#)."

The research team hope, given the potential of boosting the body's immune response, this strategy may also help inform a new generation of vaccines which could boost the body's response against other conditions like cancer and allergic diseases.

Provided by Cardiff University

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