

Immune cell insight offers hope for tackling deadly lung condition

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Fresh insights into a life-threatening lung condition triggered by blood poisoning could signal a new approach to treating the disease, researchers found.

Scientists have found that a drug, which targets key immune cells, could help to curb excessive inflammation in the lungs that is linked to the condition.

The researchers say more studies are needed, but their findings from tests on patients' cells are promising.

Acute Respiratory Distress Syndrome (ARDS) is a life-threatening condition caused by an overwhelming influx of a type of immune cell into the lungs during an infection.

These cells - called neutrophils - are initially brought in to fight the infection but they can also inflict significant damage on the lung.

At the end of an infection, neutrophils usually self-destruct in a controlled manner to prevent bystander damage to healthy tissues. In ARDS, the cells survive for longer and this is thought to contribute to a worsening of the condition.

Researchers at the University of Edinburgh sought to investigate whether targeting neutrophils could offer a useful approach to treating the condition.

They found that treating neutrophils taken from patient blood samples with a drug called AT7519 helped to restore the cells' normal self-destruct process. After 20 hours of treatment in the laboratory, the cells behaved like those of healthy people.

The findings suggest that AT7519 could offer a useful therapy to resolve inflammation in the lung in patients with ARDS.

ARDS results in severe breathing difficulties that requires treatment in intensive care. Up to half of people who develop the condition do not survive as there are currently no effective treatments. Patients are usually placed on a ventilator to help them breathe until the inflammation resolves.

AT7519 belongs to a family of drugs called cyclin-dependent kinase inhibitors and is currently being trialled as a cancer therapy. More studies are needed but researchers are optimistic that AT7519 could eventually be tested as a treatment for ARDS in patients.

The study, by the Medical Research Council Centre for Inflammation Research, is published in the journal *Thorax*.

Lead researcher Professor Adriano Rossi, said: "Our findings suggest that this drug warrants further investigation as a potential therapy for Acute Respiratory Distress Syndrome, which is a devastating condition that kills up to half of those affected."

More information: David A Dorward et al, The cyclin-dependent kinase inhibitor AT7519 accelerates neutrophil apoptosis in sepsis-related acute respiratory distress syndrome, *Thorax* (2016). [DOI: 10.1136/thoraxjnl-2016-209229](https://doi.org/10.1136/thoraxjnl-2016-209229)

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