

Asthma drug discovery

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(Medical Xpress) -- Researchers from King's College London have uncovered a new mechanism of action for a group of asthma drugs already on the market, which could enable more effective treatment for patients with a particular type of allergic asthma – between 30 to 50 per cent of sufferers.

A team of scientists and clinicians from the MRC & [Asthma](#) UK Centre in Allergic Mechanisms of Asthma at King's College London, part of King's Health Partners, have identified why a group of drugs known as Leukotriene receptor antagonists (LTRAs) are effective in some asthma cases, but not others. The researchers say further studies in [patients](#) are needed, but this information points towards a more targeted effective treatment option that could remove the need for steroids and improve outcomes in this group of patients.

Until now LTRAs were believed to suppress wheezing by preventing the

airway smooth muscles in the lung contracting. But this new study, published online today in the *Journal of Allergy & Clinical Immunology*, suggests these drugs may also stop the inflammation that causes asthma by targeting T-cells that are known to be critical to asthma development in between 30 to 50 percent of cases.

The researchers examined human TH2 cells (a type of T-cell) donated by asthma patients from Guy's Hospital, and compared these to similar cells that do not cause asthma. The researchers found that receptors, called Cysteinyl leukotriene receptors (CysLTRs), were highly expressed in the TH2 cells. During an asthma attack chemicals called leukotrienes (LTs) are produced which bind to the CysLTRs and cause inflammation in the lung. When a type of LTRA drug was introduced to the cells, the drugs blocked the CysLTRs on TH2 cells.

Recently researchers in the US have developed a blood test to identify which patients' asthma is caused by T-cell inflammation. The King's researchers say that in the future a test like this could be used to identify which patients might benefit from LTRAs.

Dr David Cousins, Senior Lecturer from the MRC & Asthma UK Centre in Allergic Mechanisms of Asthma at King's College London, said:

"This is an extremely exciting finding which represents a major step forward in our understanding of the mechanisms of asthma treatment.

"We already knew that only a certain group of patients respond to LTRA drugs, but for the first time we have a possible reason why – we have identified a new mechanism of action. We now have a more complete picture of how these drugs work so we could in the future target them more effectively to those patients who we know will respond well. LTRAs can easily be taken in tablet-form and could even remove the need for steroids, which is currently the first line of treatment in most cases.

‘We have seen this mechanism in human cells in the lab, and now we would like to carry out further studies in asthma patients’ lungs to see it working in action.’”

Although commonly prescribed in the US and mainland Europe, LTRAs are not widely prescribed to patients in the UK.

Dr. Samantha Walker, Director of Research and Policy at Asthma UK, said: “Currently leukotriene receptor antagonists (LTRAs) can be a useful addition to inhaled steroids for people with more severe allergic asthma, although it is not yet clear exactly how they work. This research seems to suggest that they play a greater role in fighting inflammation than has previously been thought, which could have important implications in both the selection of people with asthma who might benefit from taking them and the development of new treatments.”

Provided by King's College London

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