

New marker discovered to aid early detection of lung damage

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Chronic obstructive pulmonary disease (COPD) is a widespread disease. In Austria alone, there are between 500,000 and 600,000 sufferers; around ninety per cent of cases are the result of smoking. Now, under the leadership of Hendrik Jan Ankersmit, a research team from the University Department of Surgery at MedUni Vienna and the Christian Doppler Laboratory for the Diagnosis and Regeneration of Heart and Thorax Diseases has discovered a protein marker in the blood that can already indicate lung damage during the early stages of COPD, before a decrease in lung volume is detected by a pulmonary function test.

Up to now, early detection of COPD and associated [lung damage](#), such as air trapping (air that cannot be exhaled due to overinflation of the

[alveoli](#)) or pulmonary emphysema (holes in the [lung](#) filled with air that reduce the lung [surface area](#)) was not possible. Ankersmit and his team have now been able to show that protein HSP27 is a suitable marker in the blood for detecting existing lung damage—even in people who feel healthy and whose pulmonary function test results give no cause for concern.

Fifty-seven per cent of ‘healthy’ test patients showed signs of lung damage

Ninety-four apparently healthy male and female smokers (average age of 43) were studied by the University Department of Surgery, Radiology and Pulmonology at MedUni Vienna. The results of the study have been published in *Respiration*, the international journal of thoracic medicine. The test subjects voluntarily underwent a high-resolution CT scan. The results showed that 57.45% of test subjects exhibited signs of air trapping or air trapping AND [emphysema](#), even though their pulmonary function test results were within the normal ranges. Moreover, the HSP27 value, which was determined using an ELISA kit from R&D Systems, showed a significant correlation with the lung pathologies detected by radiologists during the CT scan.

Says Ankersmit: “If there is increased prevalence of the marker HSP27 and risk behaviour, such as smoking, is evident, then this may signify lung damage and, potentially, the early onset of chronic obstructive pulmonary disease.” Normally, COPD is only diagnosed when a patient can only take limited steps to interrupt the course of the disease by altering his or her lifestyle (e.g. giving up smoking).

According to Ankersmit, specific job groups are also at risk besides smokers; these include welders or furnace stokers and other people who regularly inhale smoke and chemical vapours in the course of their work.

It is Ankersmit's vision that GPs or pulmonologists will use the HSP27 value as a screening marker for lung disease in the future.

HSP27 serum marker is also diagnostically conclusive for lung cancer

Another recent study conducted by the research team, which was published in the journal *Clinica Chimica Acta*, found that patients who suffer from lung carcinomas also exhibited increased levels of HSP27. The results of the investigation confirm the starting hypothesis that there is an immunological link between COPD and lung cancer.

Chronic obstructive pulmonary disease (COPD) is an umbrella term used to describe a group of lung diseases that are characterised by coughing, expectoration and breathlessness on exertion. COPD significantly impacts on exhalation. It is one of the most common diseases worldwide. According to estimates from the World Health Organisation (WHO) from 2007, around 210 million people suffer from COPD, and this figure is rising. Worldwide, COPD is the fourth most-common cause of death; the progress of the disease cannot be halted, and its importance is growing as a result of increased life expectancies in developed countries. The primary cause is smoking, but other environmental influences, such as ozone pollution or fine particulate air pollution, are also becoming major causes.

More information: *Respiration, International Journal of Thoracic Medicine*, "Increased Serum Levels of HSP27 as a Marker for Incipient Chronic Obstructive Pulmonary Disease in Young Smokers". H. Ankersmit, et al; [DOI: 10.1159/000336557](https://doi.org/10.1159/000336557)

Clinica Chimica Acta, „Discrimination of clinical stages in non-small cell lung cancer patients by serum HSP27 and HSP70: A multi-institutional

case-control study“. M. Zimmermann, et al. [DOI: 10.1016/j.jcca.2012.03.008](https://doi.org/10.1016/j.jcca.2012.03.008)

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