Cholesterol a key player at the lung surface
1 June 2017

"Our study addresses the effect of cholesterol on the surface of the alveoli. We have obtained astonishingly clear results," says Emma Sparr, professor of chemistry at Lund University.

Cholesterol constitutes a natural ingredient in the thin surfactant that covers the inside of our lungs, but it is almost completely absent from the clinical preparations used in healthcare to treat premature babies.

"In very premature babies, the film on the surface of the alveoli has not had time to develop completely. Although we administer surfactant drugs, usually extracted from pig's lungs, to good effect in the acute phase, we still see pronounced long-term damage to the lungs of these extreme premature babies," says Marcus Larsson, a physician and researcher at Lund University's Faculty of Medicine.

In the current study, the researchers used advanced NMR technology, or nuclear magnetic resonance, to map how cholesterol affects the molecular structure of the thin film in the alveoli. The method enabled the researchers to extract completely new molecular information and to compare the appearance of the structure with and without cholesterol.

"This difference in the molecular structure of the film could be very significant to its function; both the transport of substances and the mechanical properties could be influenced by this," says Emma Sparr.

She now hopes that the research study will contribute to elucidating the significance of cholesterol for the surface of the alveoli and that resulting knowledge about this bodily surface layer can support the development of new clinical methods.

"The effect of cholesterol on the surface of the alveoli is very clear and could eventually be included in the clinical preparations, which makes good sense as our own bodily surfactant contains..."
this substance in quite significant levels," says Marcus Larsson.


Provided by Lund University