Nanofibrillar cellulose film to ease performing medical tests

October 23 2012

Researchers at Aalto University have succeeded in developing a durable and affordable nanofibrillar cellulose film platform to support medical testing. New environmentally friendly, reliable nanofibrillar cellulose (NFC) platforms are more diverse than plastic films.

New film can be made, for instance, hydrophobic, hydrophilic and the

electric charge can be changed. This will enhance the possibility of conducting thousands of different medical tests at home or in physicians' receptions instead of waiting for results from laboratories.

A platform is coated with the new film in the factory. The film is injected with substances that will react to the tested substance. At the place of testing, blood, water or another test material will be applied on to the film. The antibтody injected onto the film will absorb the sample, depending on whether it contains substances causing allergic reactions, or bacteria, for example. Then the test result is visualised with the help of colour-changing chemistry, for example.

"Thanks to the new film, various tests can be conducted faster without compromising reliability. It will now be easier to detect microbes that cause illnesses in the physician's reception, or to monitor allergens at home. In addition to medical diagnostics, the film can be utilised to study water purity," for example, says doctoral candidate Hannes Orelma at Aalto University.

Previous attempts to produce a nanofibrillar cellulose platform have failed when the porous plate absorbed part of the sample. Now researchers have developed a method of producing a waterproof nanofibrillar cellulose gel that will not absorb samples. They have also made great efforts to ensure sufficient film durability.

The article "Surface Functionalized Nanofibrillar Cellulose (NFC) Film as a Platform for Immunoassays and Diagnostics" was published in *Biointephases* journal. North Carolina State University participated in the study in addition to Aalto University.

More information:
www.springerlink.com/content/34221770q130577t/