Press release

CSEM collaborates with innovative Swiss start-up MOMM Diagnostics to introduce revolutionary preeclampsia test

- Innovative point-of-care solution for preeclampsia diagnostics
- Resembles a pregnancy test and allows a rapid diagnostic at the doctor's office
- Platform is 50 to 100 times more sensitive than traditional lateral flow immunoassays

Neuchatel/Basel, May 31, 2023 – CSEM's Tools for Life Sciences team is partnering with MOMM Diagnostics to develop a cutting-edge point-of-care solution for preeclampsia diagnostics. This ground-breaking multiplexed sensing device simultaneously detects two crucial biomarkers associated with this prevalent disease. The solution uses enzyme-linked lateral flow immunoassays (ELLFIA) with ion-sensitive electrodes in a disposable test cartridge. Alongside the development of the disposable test, a specialized digital readout device has been created. This integrated approach offers a point-of-care diagnostic test platform that is 50 to 100 times more sensitive than traditional lateral flow immunoassays. MOMM Diagnostics' comprehensive solution for rapid and reliable blood testing holds immense potential as a game-changer in clinical settings.

Pregnancy is a time filled with joy and happiness, but it can also bring about stress and anxiety due to potential risks for both mother and baby. Among the various pregnancy complications, one of the most serious and potentially life-threatening conditions is preeclampsia affecting 3 to 8% of pregnant women. It is characterized by high blood pressure and protein leakage in the urine, which can lead to kidney failure, liver failure, seizures, stroke and even death. Women with a family history of preeclampsia, multiple pregnancies, pre-existing high blood pressure, and those who are obese or have diabetes are at higher risk.

The importance of early detection

The precise cause of preeclampsia remains unknown, but it is believed to stem from inadequate development of the placenta, which supplies crucial oxygen and nutrients to the developing fetus. When the placenta does not function optimally, it can result in restricted blood flow, causing damage to the mother's blood vessels and organs.

Preeclampsia is a treatable condition and, in most cases, both mother and baby make a complete recovery. Regular prenatal care and early detection are key to preventing the serious complications associated with preeclampsia. Traditionally, preeclampsia is diagnosed through monitoring blood pressure, conducting urine protein tests, and evaluating organ function through blood tests. Unfortunately, these processes can be time-consuming, requiring multiple visits and causing anxiety for expectant mothers. The invasive nature of the testing procedures can be uncomfortable and unfamiliar, adding to the stress. The waiting period for test results can be emotionally challenging, heightening fear and anticipation. False negatives or delayed detection can occur, posing risks for both the mother and the baby. False positives, on the other hand, may increase healthcare costs due to unnecessary interventions and potentially hospitalizations.

Hope for pregnant women

Basel-based start-up MOMM Diagnostics specializes in developing highly sensitive rapid diagnostic tests. Their first test in development focuses on a novel in-vitro diagnostic test for the early diagnosis of preeclampsia, created in collaboration with medical professionals. MOMM's multiplexed point-of-care

testing method is quick, accurate, minimally invasive, and can detect the condition at its early stages when treatment is most effective.

“We analyze two very specific biomarkers in maternal blood,” says Mathias Wipf, CEO and co-founder of the company. “The assay is 50 times more sensitive than traditional rapid tests, detecting the two biomarkers in minute concentrations of several picograms per milliliter using antibodies. The specificity and sensitivity of the biomarkers used in our test are significantly higher than those of the current clinical diagnosis.”

MOMM Diagnostics received financial support from the Swiss Innovation Agency Innosuisse and from the Swiss Nanoscience Institute's Nano Argovia program to work on an electrochemical biosensor for protein detection. The project also involved collaboration with FHNW University of Applied Sciences and Arts Northwestern Switzerland, as well as CSEM’s Tools for Life Sciences team.

Rapid diagnostic test carried out in the doctor’s office

“The system resembles a pregnancy test but with electronic result analysis,” explains the entrepreneur Wipf. “This presents another advantage of the new test: The paper strip can be evaluated with a compact reader, providing a quantitative readout.” Since pregnant women regularly visit their gynecologists for check-ups, the test can be conducted in their practices without the need to ship blood samples to specialized diagnostics labs. This saves valuable time – time in which treatment can already be started.

“CSEM’s interdisciplinary expertise has played a crucial role in the development of innovative point-of-care solutions. Together, we have already created cutting-edge technologies with the potential to improve healthcare outcomes for women worldwide. We are proud to continue our collaboration with the aim of advancing the development of such an innovative solution,” underlines Samantha Paoletti, Head of Research and Business Development, Life Science Technologies at CSEM.

CSEM and MOMM Diagnostics also collaborate within the European project NewLife, which focuses on developing a range of innovative technologies for monitoring the health of women and babies during pregnancy and early childhood.

"With these projects we financed the development of our prototype", emphasizes Mathias Wipf. "Now, we are seeking investors to propel the technology to the next level. MOMM’s rapid preeclampsia test is projected to enter the market by 2025”. With its substantial market potential, Wipf anticipates double-digit million sales figures within the first five years. The Basel location, dedicated to R&D and production, is expected to expand to a team of 25 professionals.

© CSEM – Successful collaboration between start-up MOMM Diagnostics and the Swiss technology innovation center CSEM (from left to right): Samantha Paoletti (CSEM), Bradley Petkus (CSEM), Christopher Wood (MOMM Diagnostics), Mark Fretz (CSEM) and Mathias Wipf (MOMM Diagnostics). They are looking at a sample of the preeclampsia test.

Additional information

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About MOMM Diagnostics

MOMM develops high-sensitivity rapid diagnostic tests. Our technology combines the commercial advantage of lateral flow immunoassays, with the sensitivity of ELISA, and reader simplicity like blood glucose meters - opening previously laboratory-based markets for office- and self-testing.

Our first test in development is a rapid test for preeclampsia, offering unprecedented sensitivity at the point-of-care. Preeclampsia is a significant health problem and costs burden (1/3 of obstetric costs; over 2B USD in the US alone). It affects 3-8% of all pregnancies and may lead to severe short- and long-term complications. Immediate information during pregnancy check-ups helps doctors to optimize treatment, reduce stress and anxiety for expectant mothers, save lives and reduce costs. www.mommdiagnostics.com

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