

# Health Monitoring is Revolutionized by New Biomarker Technology

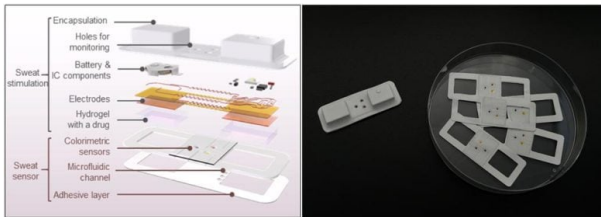
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Courtesy of SynEvol

Biomarkers found in sweat can be used to track a number of illnesses, including genetic diseases and diabetes. Users choose sweat sample over blood collection because it is a painless procedure. However, vigorous physical activity was previously needed to generate sweat in order to gather enough nutrients or hormones from sweat for testing. This approach presented difficulties for people with restricted mobility.

Professor John A. Rogers of Northwestern University and Dr. Kim Joohee of the Bionics Research Center at the Korea Institute of Science and Technology (KIST) jointly announced the development of a convenient sweat monitoring device that delivers drug stimulation through the skin without requiring physical activity. This device distributes medications that activate sweat glands through the skin, in contrast to earlier techniques that used exercise to promote sweating.



Courtesy of SynEvol

Credit: Korea Institute of Science and Technology

The research team created a flexible device that uses a current to deliver medication to a hydrogel that contains medication to sweat glands. It is simple to affix this little, flexible gadget to the skin. Drug-induced sweat is gathered in microfluidic channels inside the apparatus and biosensors are used to look for biomarkers. This makes it possible to analyze biomarkers in sweat, which decreases the need for laborious hospital trips for testing and lowers the possibility that biomarkers may be contaminated during testing, boosting testing accuracy.



Courtesy of SynEvol

Credit: Korea Institute of Science and Technology

The chloride concentration in sweat, a biomarker, was verified by attaching the gadget the study team had designed to newborns suffering from cystic fibrosis. With an accuracy of more than 98%, the results were in line with those from conventional analysis techniques employing sweat collected in hospitals.

Furthermore, the stability of the device on the skin was verified by verifying the pH and skin temperature. Since the majority of symptoms of cystic fibrosis appear in infancy, it is essential to continuously evaluate the disease's progression and physical state. This gadget makes it simple to monitor children at home, which lessens the emotional and physical strain on both the patients and the caregivers.

This recently created gadget also advances the field of non-invasive sweat-based illness monitoring in healthy persons. In addition, the technique of drug administration through the skin can be used to speed up healing by increasing drug delivery in specific locations like wounds or skin problems, in addition to causing sweating.

"We have not only addressed the limitations of existing methods for inducing sweat but have also achieved success in clinical research, bringing us one step closer to commercialization," said Dr. Kim Joohee, following two years of collaborative study with Northwestern University. "We plan to conduct large-scale clinical studies and commercialization, including adults," Professor John A. Rogers continued.

