

ABSTRACT

Biosensors can be defined as devices capable of providing information with biological recognition elements. In its application, it can be integrated with microfluidic systems, which are micrometer-sized channels. Using biosensors with microfluids can reduce costs, increase specificity, and limit detection sensitivity compared to conventional detection methods.

The use of biosensors has been carried out in various fields, such as health and the environment. Therefore, its application can be developed in sports and health, namely for people who exercise excessively to the point that they forget the time so that the goal of the exercise is no longer to nourish the body. However, harm to the body. When exercising, not only energy is expended but also fluids through sweat. In this case, the loss of fluids related to sodium ions can cause the body to experience health problems or disease.

The author offers a solution, which is a product that can be used during exercise to monitor sports activities and provide warnings when exercise is excessive and indicated to be harmful to the body. This product utilizes a biosensor that can detect sodium ions in sweat, which will be converted into a voltage signal that the microcontroller can later send to the IoT and the applications that have been made. In this application, users can see data on sodium ions that come out of the body during exercise and the application can also provide notifications when the user is indicated to have a disturbance in the body's fluid balance.

In this study, the biosensor was able to detect sodium ions and the detection results were successfully converted into a voltage signal by a potentiostat. Then the data in the form of a voltage signal is successfully converted into mmol/L units, which are units of sodium ions, which are then sent to the IoT platform and applications that have been made. Furthermore, when the user is indicated to have a deficiency or excess of sodium ions, a notification will be sent to the user to notify them to rest or end their activities.

Keywords: Sodium Ion, IoT, Sweat, Sports