



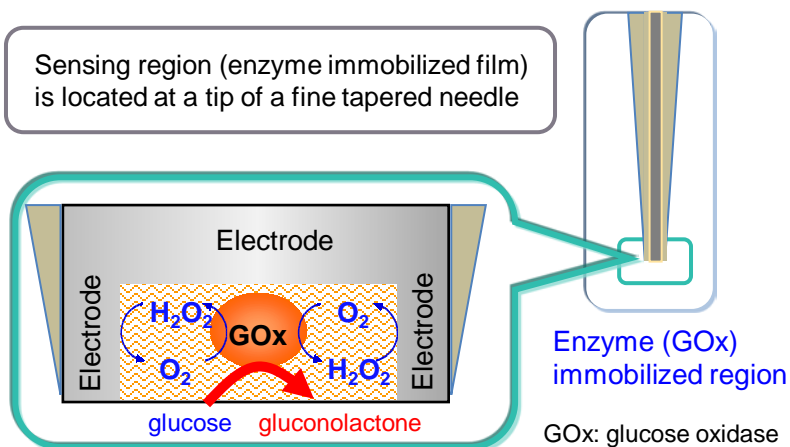
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Development of Minimally Invasive Type Biosensor for Continuous Glucose Monitoring

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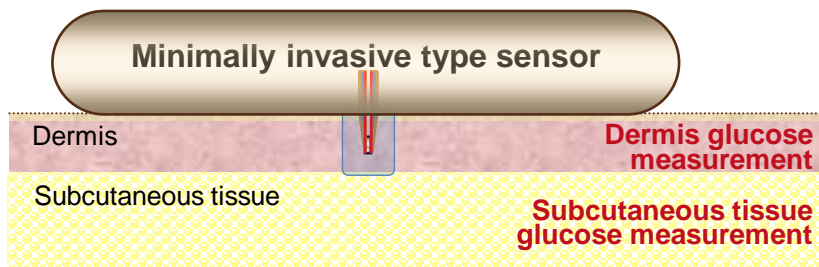
Minimally invasive type glucose sensor

Sensing region (enzyme immobilized film) is located at a tip of a fine tapered needle



Only the most tip of a fine needle (less than 1.0 mm in length) must be inserted in the skin.

Minimally invasive type sensor



Sensor placement

Conventional sensor

Minimally invasive type sensor

“Inserting”



“Sticking”

Content:

Diabetes is a leading cause of morbidity and mortality and a major health problem around the world. It is well known that keeping good control of the blood glucose degree can prevent the onset and progression of serious diabetes complications. Therefore, it is important to accurately recognize the blood glucose degree and provide appropriate treatments. Daily self-monitoring of blood glucose (SMBG) is the essential procedure for blood glucose level recognition. However, it may require stressful action even after midnight and the observed value is a point without direction. Recently, implantable glucose sensors for continuous glucose monitoring system (CGMS) for diabetes patients have been developed and is now available on the market. They can provide useful information to predict the upcoming situation such as hyperglycemia and hypoglycaemia. However, they require the device to be inserted about 1 cm in length inside the skin. Therefore, the development of lower invasive CGMS is expected for the improvement of diabetic patients “quality of life (QOL)”. We have recently developed a low invasive type glucose sensor, which has a sensing region at the tip of a fine pointed electrode. A clear sensor response correlative with the trend of blood glucose was obtained using a device inserted in skin no more than 1 mm in length.

Keywords : Electrochemistry, biosensor, continuous glucose monitoring system, biocompatible material, eco-friendly water purification

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