

Recent Advances in Continuous Glucose Monitoring: Biocompatibility of Glucose Sensors for Implantation in Subcutis

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Abstract

Tight glycemic control slows or prevents the development of short- and long-term complications of diabetes mellitus. Continuous glucose measurements provide improved glycemic control and potentially prevent these diabetic complications. Glucose sensors, especially implantable devices, offer an alternative to classical self-monitored blood glucose levels and have shown promising glucose-sensing properties. However, the ultimate goal of implementing the glucose sensor as the glucose-sensing part of a closed loop system (artificial pancreas) is still years ahead because of malfunctions of the implanted sensor. The malfunction is partly a consequence of the subcutaneous inflammatory reaction caused by the implanted sensor. In order to improve sensor measurements and thereby close the loop, it is crucial to understand what happens at the tissue-sensor interface.

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Abbreviations: (CGM) continuous glucose measurements, (HE) hematoxylin and eosin, (ISF) interstitial fluid, (PC) phosphorylcholine, (PLGA) poly(lactide-co-glycolide), (SMBG) self-monitoring of glucose levels

Keywords: animal model, biocompatibility, continuous glucose monitoring, glucose sensor, *in vivo* model, inflammation, subcutis

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