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Low-Cost Biosensor for Fetal Growth Restriction Detection

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Introduction

Fetal Growth Restriction (FGR) is a serious medical condition characterized by an inadequate growth of the fetus during pregnancy, leading to potential health risks for both the mother and the baby. Timely detection of FGR is crucial for appropriate medical intervention and management, as it can significantly reduce adverse outcomes. However, in low-resource settings, access to sophisticated medical equipment and expertise is often limited, hampering the early detection of FGR [1]. This calls for innovative and affordable solutions that can bridge this gap and enable reliable FGR detection. In this context, the development of a low-cost biosensor holds great promise, offering the potential to enhance prenatal care and improve maternal and fetal health outcomes. The clinical exertion of recognizing Fetal Growth Restriction (FGR) is significant and critical as FGR is related with the greater part of all actually births as well as long haul wellbeing with expanded chance of cardiovascular sickness for survivors [2]. A huge really impact in context is moving the clinical concentration from evaluating for FGR utilizing the least biometric measures (e.g., fetal weight) of a populace based or tweaked reference to utilizing different biomarkers of placental brokenness. In parallel, new opportunities for remote health monitoring and biosensors, regardless of clinical setting or expertise, have emerged as a result of the development of healthcare communication architecture [3].

Description

The Low-Cost Biosensor for Fetal Growth Restriction Detection is a ground-breaking technological solution aimed at addressing the challenges posed by limited resources in healthcare settings. This biosensor is designed to provide an accessible and accurate means of identifying FGR in pregnant women, particularly in regions where advanced medical infrastructure is scarce. The biosensor functions by measuring specific biomarkers present in maternal blood samples, which can indicate the presence of FGR [4]. These biomarkers are intricately linked to the growth and development of the fetus, making their detection a valuable diagnostic tool. The biosensor's design prioritizes simplicity, cost-effectiveness, and ease of use. It consists of a portable device equipped with microfluidic channels and sensor arrays capable of detecting and quantifying the relevant biomarkers. A small blood sample from the pregnant woman is introduced into the device, and within a short span of time, the biosensor provides a clear indication of whether FGR is likely. The device's results can be easily interpreted by healthcare personnel, enabling timely intervention and appropriate prenatal care [5].

Conclusion

In resource-constrained environments, where sophisticated medical equipment is often beyond reach, the Low-Cost Biosensor for fetal growth restriction detection emerges as a beacon of hope. By harnessing the power of biotechnology and innovative engineering, this biosensor offers a practical and affordable solution for the early identification of FGR. Its potential to revolutionize prenatal care cannot be overstated – empowering healthcare providers with a tool that could significantly reduce the burden of adverse outcomes associated with FGR. As we embrace the era of accessible healthcare technology, this biosensor paves the way for a future where all expectant mothers, regardless of their geographical location or economic status, can receive the timely and effective care they deserve.

Acknowledgement

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Conflict of Interest

There are no conflicts of interest by author.

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