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Aptheimer: Design of Aptasensor with Carbon Electrodes and Prediction Algorithm for the Early Pseudo Diagnosis of Alzheimer's Disease

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Abstract

Alzheimer's is a neurodegenerative disease that is constantly growing in Peru. It affects more than 200,000 elderly people. This fact highlights the importance of creating diagnostic methods that are more accessible and efficient. Considering this, a novel approach proposes a biosensor to identify biomarkers, such as beta-amyloid and phosphorylated tau, in blood samples. The aptasensor works together with a prediction algorithm based on clinical data. The procedure involves acquiring aptamers, choosing carbon electrodes, and using a convolutional neural network model to detect Alzheimer's in the early stages. This system is expected to provide an accurate pseudo-diagnosis, reducing the need for invasive procedures and improving the clinical treatment of the disease, which at the same time will improve the quality of life of patients and their families. © 2024 Latin American and Caribbean Consortium of Engineering Institutions. All rights reserved.

Author keywords

Alzheimer's Disease; Aptasensor; Biomarkers; Carbon Electrodes; Convolutional neural networks; Predictive Algorithm

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