

Biosensor Technologies in Neurotransmitters Detection

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Abstract : Catecholamines are vital neurotransmitters that mediate a variety of central nervous system functions, such as motor control, cognition, emotion, memory processing, and endocrine modulation. Dysfunctions in catecholamine neurotransmission are induced in some neurologic and neuropsychiatric diseases. Changeable neurotransmitters level in biological fluids can be a marker of several neurological disorders. Because of its significance in analytical techniques and diagnostics, sensitive and selective detection of neurotransmitters is increasingly attracting a lot of attention in different areas of bio-analysis or biomedical research. Recently, optical techniques for the detection of catecholamines have attracted interests due to their reasonable cost, convenient control, as well as maneuverability in biological environments. Nevertheless, with the observed need for a sensitive and selective catecholamines sensor, the development of a convenient method for this neurotransmitter is still at its basic level. The manipulation of nanostructured materials in conjunction with biological molecules has led to the development of a new class of hybrid-modified enzymatic sensors in which both enhancement of charge transport and biological activity preservation may be obtained. Immobilization of biomaterials on electrode surfaces is the crucial step in fabricating electrochemical as well as optical biosensors and bioelectronic devices. Continuing systematic investigation in manufacturing of enzyme-conducting sensitive systems, here is presented a convenient fluorescence as well as electrochemical sensing strategy for catecholamines detection.

Keywords : biosensors, catecholamines, fluorescence, enzymes

Conference Title : ICAEBB 2022 : International Conference on Advances in Enzyme-Based Biosensors

Conference Location : Dubrovnik, Croatia

Conference Dates : October 06-07, 2022