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Biosensors for toxicity determination of organophosphates and carbamates in the human blood

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The advent of green revolution ensured improved agriculture production of the country but the excessive use of synthetic chemicals known as pesticides over the crops resulted in environmental contamination and posed incredible risk to human population. These harmful chemicals due to persistence in the environment meddle in the neurotransmission process of an individual during synapses process. Hence their analysis and detection is of significant concern today. Conventionally, chromatographic and spectrophotometric strategies utilized for the pesticide recognition have a few impediments so there is a need to develop some efficient sensor that can intelligently detect the pesticide genre and prevent us from intake of harmful chemicals. This need pulls our consideration towards the study of biosensors that can help the common people for their bio sample tested for contamination detection. This paper highlights the real time detection of major class of pesticides such as organophosphates and carbamates that inhibit the enzyme acetylcholine esterase, an essential constituent of neurotransmission process for hydrolyzing acetylcholine into choline and acetic acid in the human blood utilizing biosensors due to their exceptional characteristics to reduce the risks caused by these harmful chemicals. Biosensors have turned out to be a conservative device in the fast acknowledgment of poisonous chemicals by simplifying sample collection, extraction and cleanup methods. A variety of cholinesterase biosensors have been discussed based on affinity and catalytic based interactions for recognition of organophosphate and carbamate poisoning.

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