Nano-methods to knock out nerve agents

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**Abstract**. Nerve agents are the most violent form of chemical warfare agents which pose a tremendous effect directly on the nervous system by inhibiting an important neurotransmission enzyme, acetylcholinesterase (AChE) [1]. Symptoms such as convulsions, respiratory failure and death are observed due to the overstimulation of glands, muscles and the central nervous system. Rapid onset of effect on the nervous system and high toxicity has made nerve agents a significant threat to the ecosystem. Despite several methods being devised for detoxification and management of nerve agents, these are posing a potential challenge in terms of toxicity, efficiency and specificity. After ages, the researchers are devising techniques to neutralize these nerve agents using modern nanotechnology. Cutting-edge progress in nanotechnology is providing novel solutions for efficient, biocompatible and precise detoxification and breakdown of nerve agents [2]. The present paper explores the types of nerve agents, use of nanomaterials in knocking of nerve agents, facile detection methods and prominent treatments to disrupt the nerve agents. Enhanced surface area, enhanced catalytic potential and selective binding enable the neutralization of organophosphorus compounds and other neurotoxins [3]. The advancements in nanotechnology in the form of biosensors and effective drug delivery systems has facilitated in immediate detection and tailored treatment to knock out nerve agents and reduce the associated risks [4,5]. Nanotechnology can further be used for real world applications in the fields of defense and biomedical field.

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