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Green technology for harmful mosquitoes

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Mosquitoes are notorious undesirable pest which transmit dreadful diseases while sucking human blood. Among the diseases caused, malaria is one of the oldest disease in the world whereas dengue a current one which is often fatal. WHO estimates that 2.5 billion people have been infected with dengue vector and this viral infection increases with increase in urbanization. Since no vaccines or drugs available, these mosquito-borne diseases can be prevented by killing the mosquitoes and restrict them from breeding and biting humans. Usage of synthetic insecticides and growth regulators pose severe environmental health problems due to long-term residual accumulation, on non-target organisms and their prolonged usage lead to resistance in mosquitoes.

In this context, biologically active molecules from natural sources like bacteria, fungi and plants, will be safe and non-hazardous. Therefore, nanoparticles (NPs) ranging less than a micron to that of individual atoms have been synthesized for varied applications. These NPs involve inorganic including metallic NPs, oxide NPs, sulfide NPs and other typical NPs. Many physical, chemical, biological and hybrid methods available to synthesis these NPs, and those produced using physical and chemical methods has their limitation in biomedical applications due to the use of toxic chemicals during synthesis. Hence, reliable, nontoxic, and eco-friendly methods are required to expand their biomedical applications which include a wide spectrum of applications involving targeted drug delivery, cancer treatment, gene therapy and DNA analysis, antibacterial agents and biosensor in electronic devices.

Plants possess compounds at various constitutional levels naturally avail non-toxic product serves as alternative source for mosquito control. Extracts and oils from serve as potential anti-mosquito agents. Therefore, using plant extracts in NPs synthesis has enabled large-scale production of biogenic nanocides effective in controlling the mosquito population.

Biography

M. Nalini, Assistant Professor in the Dept. of Zoology, Poompuhar College. She did her postdoctoral research at Masaryak University, Czech Republic and Andong National University, Republic of Korea. She has published 30 research articles in reputed journals, has presented her research findings in various national and international forums and has been serving as reviewer for many peer reviewed journals. She is a recipient of International Travel Grant from DBT, Summer Research Fellowship-2013 from Indian Sciences Academies'. She has delivered several guest lectures, organized and conducted scientific workshops for students, researchers and faculties. Has guided students for M.Phil. and doctoral degrees. To her honour she has two patents to her credit. She is a Member of American Microscopical Society, Life member of Indian Science Congress and Entomology Academy of India.

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