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TITLE

Potential use of DNA Bound Nanoparticles for Transcutaneous Vaccine Delivery

Gülay Büyükköroğlu

Anadolu University, Turkey

Over the past 15 years, much focus has been on DNA vaccines as a simple method to induce both humoral and cellular immune responses. Intramuscular injection of plasmid DNA in saline have proven to be widely applicable for inducing immune responses and protective efficacy in small animal models. However, DNA vaccination in many cases is hampered by poor efficacy. In contrast to vaccines that employ recombinant bacteria or viruses, genetic vaccines consist only of DNA or RNA, which is taken up by cells and translated into protein. In case of gene-gun delivery, plasmid DNA is precipitated on to an inert particle and forced into the cells with a helium blast. Transfected cells then express the antigen such as recombinant protein, generally induces only antibody responses. Genetic vaccines can be delivered into the host by several routes and methods. Needle-injection into muscle tissue and into the skin is the most commonly used method. Various cell types of the skin are involved in the development of immune response. The topical application of DNA vaccine to the skin is a useful method of immunization because of its simplicity, painlessness and economy. Vaccination usually requires needle injections by medical personnel. Non-invasive vaccination onto the skin by expressing antigens in the outer layer of skin not only may allow the administration of vaccines by individuals without medical training or equipment, but may also elicit more potent immune responses than conventional needle injections given equivalent doses due to the immunocompetence of epidermis along the skin border.

Biography

Gülay Büyükköroğlu has completed Ph.D at the age of 33 years from Anadolu University and postdoctoral studies from University of London The School of Pharmacy. She is head of Pharmaceutical Biotechnology at Anadolu University Faculty of Pharmacy.