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Microneedles: An approach to vaccine drug delivery system

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Transdermal drug delivery system is widely known and used by many patients for its non-invasive method. It is a convenient route of drug/vaccine delivery and also prevents first pass metabolism and gastrointestinal degradation. Future research is based on microneedles which deliver different low molecular weight protein drugs, biotherapeutics and vaccines. These microneedles deliver the active therapeutic molecules into a localized regions or targets inside the body and also deliver active therapeutic molecules across the skin which inturn leads into the circulatory system. Nowadays vaccination delivery using these microneedles targeting the skin is rich in demand. Also the immune system gets improvised by using lower vaccine dose than required by conventional deliver routes. Microneedles are categorized as solid microneedles for tissue pretreatment, drug-coated microneedles, dissolving micro-needles, and hollow microneedles. Each of these microneedle designs enables drug delivery by different mechanisms. Microneedles (MNs) have been demonstrated to increase the number of compounds amenable to transdermal delivery by penetrating into the skin's protective barrier, i.e. the *stratum corneum*, and creating a pathway for drug permeation to the dermal tissue. Microneedles based vaccines provides a platform to deliver the vaccine dose reproducibly and improves the safety of the application. This technology requires low level of expertise. The main therapeutic goal of the microneedles is to increase skin permeability and today the applications of these micro-needles have been extended to many fields, including transdermal, ocular and intracellular delivery. However, the transdermal routes are still the dominating area for application of microneedles, especially in vaccine delivery.

Biography

B Vasudha has completed her PhD from SNDT University, Mumbai and MPharm studies from Manipal College of Pharmacy, Manipal. She was awarded with Senior Research Fellow from Department of Biotechnology. She is presently working as a Principal of Anurag Group of Institutions (formerly Lalitha College of Pharmacy), a renowned education Organization. She has number of national and international papers to her credit.

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