

Microneedles: A New Frontier In Cancer Therapy

Vaibhav R Dhanlobhe¹, Buddharatan D Dongre², Nikhil B Khandale³,

Vishal B Mahanur⁴, Akhil P Maske⁵, Md Hanif Mondal⁶

Students, Vardhaman College of Pharmacy, Karanja (Lad), Maharashtra, India^{1,2}

Assistant Professor, Department of QA and Regulatory Affairs, L .J. Institute of Pharmacy, Ahmedabad, India³

Assistant Professor, Department of Pharmaceutical Analysis⁴

Associate Professor, Department of Pharmaceutics⁵

Vardhaman College of Pharmacy, Karanja (Lad), Maharashtra, India^{4,5}

Lecturer, East West College of Pharmacy, Bangalore, India⁶

Abstract: *Even though oncology has advanced throughout time, cancer remains the largest cause of mortality, a global burden that negatively affects patients' quality of life and the global economy. The present traditional cancer treatments, which include lengthy treatment periods and systemic drug exposure, cause early drug deterioration, excruciating pain, adverse effects, and cancer recurrence. In order to prevent further delays in cancer patient diagnosis or treatment which are crucial in lowering the worldwide mortality rate personalized and precision-based care are also desperately needed, particularly in light of the current pandemic. Recently, microneedles a patch with tiny, micron-sized needles attached have gained a lot of attention as a cutting-edge transdermal application technique for the diagnosis or treatment of a variety of diseases. Since microneedle patches provide a better treatment approach through self-administration, discomfort-free treatment, and an economical and environmentally friendly approach compared to other conventional methods, the use of microneedles in cancer therapies is also being thoroughly researched. The several kinds of microneedles, their materials and manufacturing processes, as well as the most current developments and prospects, are highlighted in this overview. Furthermore, this review discusses the difficulties and constraints associated with using microneedles in cancer treatment and offers solutions based on ongoing research and upcoming projects to support the clinical application of microneedles in cancer treatment...*

Keywords: Microneedles, Cancer, Cancer therapy, Drug Delivery, Chemotherapy