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Hetal Thakkar

Maharaja Sayajirao University of Baroda, India

Microneedles: A painless approach for enhancement of transdermal drug delivery

Microneedles may be defined as needles that are 10-2000 microns in height and 10-50 microns in width. They are available in the form of an array, which consists of a plurality of micron-sized projections typically assembled on one side of a supporting base or patch. Microneedles are the sharp and short needles used for enhancement of transdermal permeation of drugs. Due to their short length, upon application, they do not touch the nerve endings and hence are devoid of pain. Different types of microneedles reported to enhance the transdermal permeation are solid MN, coated MN, hollow MN and dissolving MN. Various materials ranging from metal, silicon, glass, sugars and polymers-biodegradable and non-biodegradable have been used for fabrication of microneedles. The present paper aims to highlight the importance and application of various types of microneedles in transdermal drug delivery. The advantages and disadvantages of the different types of microneedles would be discussed. Depending upon the material used for fabrication, microneedles may be employed for rapid release or sustained release of drug. Microneedles are particularly useful for delivery of biopharmaceuticals like hormones, peptide and protein delivery. A case study involving the use of microneedles for enhancement of transdermal penetration of a drug will be presented.

Biography

Hetal Thakkar is currently working as Assistant Professor at The Maharaja Sayajirao University of Baroda.

hetal_thakkar11@yahoo.com

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