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Polymeric Microneedles for Transdermal Protein Delivery

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**Abstract:**

The intrinsic properties of therapeutic proteins present a major impediment for transdermal delivery, including their relatively large molecule size and susceptibility to degradation. One solution is to utilize microneedles (MNs), which are capable of painlessly traversing the stratum corneum and directly translocating protein drugs into the systematic circulation. MNs can be designed to incorporate appropriate structural materials as well as therapeutics or formulations with tailored physicochemical properties. This platform has been applied to deliver drugs both locally and systemically in applications ranging from vaccination to diabetes and cancer therapy. This review surveys the current design and use of polymeric MNs for transdermal protein delivery. The clinical potential and future translation of MNs are also discussed.

**Keywords:**

Drug delivery, Transdermal, Microneedle, Protein Delivery, Vaccine

**Contents:**

1. Introduction.....	2
2. Types of delivered protein .....	2
2.1 Proteins with enzymatic or regulatory activity.....	3
2.2 Antibodies.....	3
2.3 Vaccines.....	3
3. Representative types of polymeric MN.....	4
3.1 Coated MN.....	5
3.2 Dissolvable MN.....	7
3.3 Degradable MN.....	9
3.4 Bioresponsive MN.....	10
4. Conclusion and outlook.....	14
Acknowledgement.....	14
References.....	14

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