OPEN ACCESS Freely available online

ISSN: 2161-1459
Journal of Clinical & Experimental Pharmacology

Perspective

Challenges in using Microneedle Technology for the Treatment of Warts

Mark Becker*

Department of Medicine, Maastricht University Medical Center, Maastricht, The Netherlands

DESCRIPTION

Warts are a frequent skin ailment caused by a viral infection. In a survey of school children in Taiwan, 6.9% were afflicted with viral warts, with youngsters aged 12 to 16 years being the most affected. Current therapies rely on either wart ablation (cryotherapy, laser vaporization, electrodesiccation, salicylic acid, silver nitrate, and trichloroacetic acid) or organic process interruption (podofilox, intralesional or systemic interferon, intralesional Bleomycin, and 5-fluorouracil). Imiquimod, also known as 1-(2-methyl propyl)-1H-imidazo[4,5-c]quinolin-4-amine, is a synthetic compound from the imidazoquinolone family that is suitable for topical application and has been used successfully as an immune response to an modifier for the treatment of the external warts. Imiquimod activates the innate arm of the immune system *via* the Toll-Like Receptor 7 (TLR7). When imiquimod is injected into the epidermal layer of skin, it activates antigen-presenting cells, which then travel to local lymph nodes to activate the adaptive immune system. However, various negative effects have been reported after using imiquimod. Using too much of this medicine or for too long can increase the chance of undesirable skin reactions like itching, discomfort, and erosions. Patients should also avoid direct sunlight after administering imiquimod topically.

As an alternative to those invasive and painful procedures, microneedle technology, a minimally invasive drug delivery system, can be used to deliver a topical medicine *via* the skin. This method would provide painless treatment options and promote patient adherence. Furthermore, it allows for personalized therapy, which is especially beneficial for the elderly and children. Microneedle arrays range in length from 25 m to 2000 m and are attached to a base-supporting patch. They may easily penetrate the epidermal barrier of the stratum corneum but are short enough to attenuate the invasion and cause no pain to the patient. Several researchers recently discovered that microneedle vaccines can deliver effective immunisation against infectious diseases and are just as useful as a syringe used for vaccine injection.

To date, four types of microneedle arrays have been developed: solid, coated, dissolving, and hollow. Every type of microneedle has advantages and disadvantages. A solid microneedle is used to puncture the skin's surface and apply the medicine to the skin layer, allowing the drug to slowly diffuse through the holes. A water-soluble medication is typically coated on the coated microneedle. The hollow microneedles are shaped like a short-length conventional syringe, allowing liquid medication to be injected straight into the skin layer. However, these microneedles are made of non-biodegradable materials that may shatter and remain in the skin, causing a severe inflammatory response. Dissolving microneedles, unlike other types, are made of water-soluble materials, permitting cutaneous drug release once the needles come into contact with tissue fluid and preventing disease without leaving a puncture wound.

Microneedles with imiquimod coating have recently been created. They are made using the dip-coating procedure, which involves immersing patches in a liquid solution and coating the medication onto the surface of microneedle tips. Although this technology is straightforward, adequate excipients are required to stabilize the medication during the coating process and hence decrease its activity. Furthermore, these microneedles are made of non-biodegradable materials that pose a risk in clinical settings.

Correspondence to: Mark Becker, Department of Medicine, Maastricht University Medical Center, Maastricht, The Netherlands, E-mail: markbecker@gmail.com

Received: 01-Mar-2023, Manuscript No. CPECR-23-21011; **Editor assigned:** 06-Mar-2023, PreQC No. CPECR-23-21011 (PQ); **Reviewed:** 22-Mar-2023, QC No. CPECR-23-21011; **Revised:** 29-Mar-2023, Manuscript No. CPECR-23-21011 (R); **Published:** 06-Apr-2023, DOI: 10.35248/2161-1459.23.13.359

Citation: Becker M (2023) Challenges in using Microneedle Technology for the Treatment of Warts. J Clin Exp Pharmacol. 13:359.