



Emergence of Novel Mechanisms in Erectile Dysfunction Treatment

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In 2023, the U.S. Food and Drug Administration granted approval for MED3000 gel (Futura Medical) to be sold over the counter, marking a significant milestone in the treatment of erectile dysfunction [1]. Unlike previous topical creams, MED3000 operates through a distinct mechanism by inducing erections via physical nerve stimulation [2,3].

Derived from the advancements made with MED2005 (topical glyceryl trinitrate gel), MED3000 represents an evolution in erectile dysfunction treatment by excluding glyceryl trinitrate from its formulation [2]. The development of MED3000 was spurred by research findings from the FM57 phase 3 trial, conducted during the exploration of MED2005, which demonstrated favorable outcomes regarding erectile function even in control groups excluding glyceryl trinitrate [2]. This discovery led to the creation of MED3000, which utilizes a unique evaporative mechanism to induce erections.

The volatile solvent mixture within MED3000 activates nerve sensors in the glans of penis, leading to smooth muscle relaxation, tumescence, and the onset of an erection [2]. Researchers suggest that the cooling effect from solvent evaporation, followed by warming upon application, triggers the physiological response

necessary for an erection [2]. The somatosensory pathway plays a crucial role in this process, originating from sensory receptors located in various parts of the penis and converging into the dorsal nerve of the penis, which joins other nerves to become the pudendal nerve [4]. Activation of these sensory neurons transmits signals related to touch, temperature, and pain to the brain, initiating the erectile response. Within the corpora cavernosa, nerve fibers stimulate the release of vasoactive neurotransmitters like nitric oxide, promoting relaxation of cavernosal smooth muscle and increasing blood flow to the penis [5].

Clinical trials, such as FM57 and FM71, have demonstrated the efficacy and safety of MED3000 in treating erectile dysfunction across different severities [2,3]. Results showed significant improvements in erectile function with rapid onset and minimal side effects compared to traditional oral medications like phosphodiesterase 5 inhibitors [3].

MED3000's distinct mechanism of action and favorable safety profile position it as a promising option for erectile dysfunction treatment. Further research is warranted to explore its applicability in various clinical scenarios and its potential to revolutionize erectile

Received: Mar 4, 2024 **Revised:** **Accepted:** Mar 15, 2024 **Published online** May 16, 2024

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dysfunction therapy.

Conflict of Interest

The authors have nothing to disclose.

Funding

This study was supported by a National Research Foundation of Korea(NRF) grant funded by the Korean government (MSIT) (NRF-2023R1A2C1003830 & NRF-2022R1A2C2008207).

Acknowledgements

None.

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