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Scientists discover new treatment for skin infection

02 August 2017 | News

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George Washington University researchers have found that topically applied nitric oxide-releasing nanoparticles (NO-np) are a viable treatment for deep fungal infections of the skin caused by dermatophytes, for which the current standard of care is treatment with systemic antifungals.

While superficial infections can often be managed with topical agents, fungal infections which infiltrate the hair follicle or into deeper layers of the skin can only be effectively treated with oral or systemic antifungal therapies. Topical antifungals offer limited penetration through the skin.

The researchers turned to nitric oxide, a natural, gaseous immunomodulator with broad-spectrum, multi-faceted antimicrobial activity, as the ideal agent for treatment.

In an animal model, the research team found that NO-np facilitated a quicker, more impactful response to treatment over the commercially available topical terbinafine, showing 95 percent of infection clearance by the third day of treatment. These findings are in line with multiple previous reports utilizing the NO-np against fungal and bacterial surgical wound and burn infection.

The next step is to scale up the technology for clinical trial use in several therapeutic areas given the diverse clinical implications of the nitric oxide producing nanoformulation, as well as the platform overall given its unique ability to encapsulate and deliver a broad range of active ingredients.