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Exploring Plasma-Activated Water as a Sustainable Alternative for the Treatment and Prevention of Dermatophytosis in Companion Animals

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Abstract: Dermatophytosis affects both humans and animals and is increasingly resistant to antifungal drugs. Plasma-activated water (PAW) produces reactive species with strong antimicrobial effects. In this study, PAW reduced viable dermatophyte spores by over 4 log₁₀ after 15 minutes. PAW is a safe, eco-friendly, and effective alternative for treating and preventing dermatophytosis.

• Introduction

Dermatophytosis is a common zoonotic infection. Drug resistance and environmental persistence make control difficult. PAW offers a sustainable disinfection method using reactive oxygen and nitrogen species without toxic residues.

• Material and method

Ten feline dermatophytosis cases were examined. Isolated arthrospores were exposed to PAW for 15 minutes. Fungal load reduction was measured using quantitative culture methods.

• Results and discussions

PAW exposure caused over 4 log₁₀ reduction in viable spores across all species tested. Results confirm PAW's strong antifungal activity and potential for both treatment and surface decontamination.

• Conclusions

PAW is a safe, sustainable, and efficient antifungal tool for managing dermatophytosis in companion animals and reducing environmental contamination.

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