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Antifungal Activity of Non-thermal Dielectric Barrier Discharge Plasma Against Clinical Isolates of Dermatophytes

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Dermatophytes can invade in keratinized tissues and cause dermatophytosis [1] that rank among the most widespread and common infectious diseases world-wide. Although several systemically and topically administered drugs with activities against these fungi are available, still complete eradication of some of these infections, is difficult and relapses and remissions are often observed [2,3]. In addition, some people are allergic to many of the available drugs which add complications even more. Therefore, the search for novel, selective and more effective therapy is always required and it may help the clinicians to choose the correct treatment for their patients. Non-thermal plasmas primarily generate reactive species and recently have emerged as an efficient tool for medical applications including sterilization. In this study, we evaluated the ability of non-thermal dielectric barrier discharge (DBD) plasma for the inactivation of clinical isolates of Trichophyton genera, Trichophyton mentagrophytes (T. mentagrophytes) and Trichophyton rubrum (T. rubrum), which cause infections of nails and skin and, are two of the most frequently isolated dermatophytes [4]. Our results showed that DBD plasma has considerable time dependent inactivation potential on both T. mentagrophytes and T. rubrum in-vitro. Furthermore, the mechanisms for plasma based T. mentagrophytes and T. rubrum inactivation and planning for in-vivo future studies will be discussed.

References

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