

**TREATMENT OF CLINICAL DERMATOSIS USING A  
DIRECT-CURRENT, ATMOSPHERIC-PRESSURE  
COLD PLASMA MICRO-JET**

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Dermatophytes are the most common aetiological agents, which invade into keratinized tissues (skin, hair, nails) of humans and animals causing dermatophytosis (also known as ringworm or tinea). Swimming pools, fitness centers, barber shops, beauty parlors, saunas and steam baths are common places to pick up superficial fungal infections. Mycotic infections have become more important because of their tendency for chronic progression and the tendency of deep-site or systemic infection. The presence of non-albican species, which are resistant to normal antifungal agents, has been raising in recent years, for –among other reasons- the frequent prophylactic use of antifungal chemicals.

In this paper, a direct-current, atmospheric-pressure, He/O<sub>2</sub> (2%) cold plasma microjet (PMJ) was applied to *Trichophyton rubrum* (the most frequent dermatophyte, *Candida* spp (which causes thrush and vaginal candidiasis) and three other types of fungi. Effective inactivation was achieved both in air and in water within 5 min of plasma treatment. A high concentration of OH radicals was detected by Electron Spin Resonance (ESR) spectroscopy. Optical emission spectroscopy also showed strong atomic oxygen emissions in air and in water. The inactivation was verified by a XTT test. The chemosensitivity of these fungi changed significantly as a consequence of the plasma treatment. This novel approach to treat dermatosis has the potential for clinical applications.

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