

Rapid and Specific Diagnostics of Fungal Nail and Skin Infections

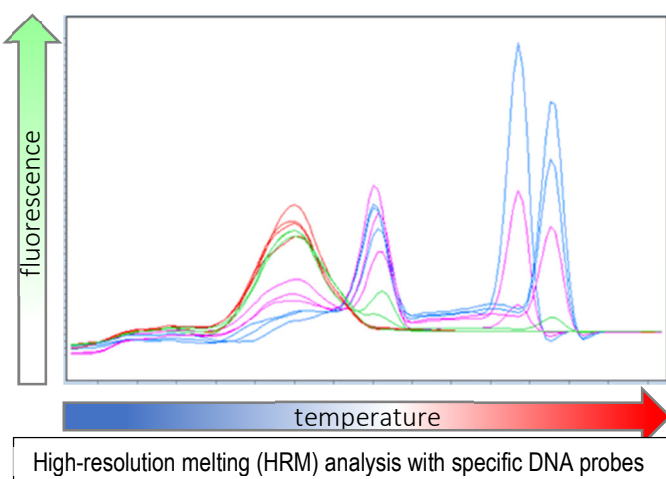
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Challenge

Fungal nail and skin infections affect 10 – 30% of people globally with increasing prevalence. Risk factors are age, age-related diseases, diabetes, but also habits like wearing synthetic shoes. Some disease forms are commonly called “athlete’s foot”. Commons sources of infection are shared public bare-foot areas like in sports facilities and hotel rooms, or households with infected family members or pets. Optimal treatment depends on the fast and accurate detection of the pathogen involved. The current standard method is the combination of microscopic examination, of native samples and fungal culture. Fungal culture, however, takes several weeks and fails in up to 30 % of cases, often because previous self-medication causes the samples not to be cultivable. This results in a greatly delayed diagnosis and the choice of often suboptimal treatment.

Technology

The novel rapid detection method is a real-time PCR, which delivers results within 24-48 hrs. As a DNA-based method it also detects non-cultivable pathogens. The method detects all fungal pathogens causing nail and skin infections and is up to 30 % more sensitive than fungal culture. It is the first method that is able to detect any dermatophyte of human or animal origin and to differentiate between closely related species.



This is achieved by the use of a novel DNA marker with exceptionally high discriminatory power in combination with high resolution melting (HRM) analysis. This enables a fast decision for the most efficient treatment, infection management to avoid re-infection by endemic or zoophilic pathogens, e.g. from an untreated pet, and epidemiologic monitoring. The method is robust and cost-effective and therefore suitable

for regular monitoring of therapy success as well as for screening of pets, which may be asymptomatic carriers and transmitters of fungal spores.



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Commercial Opportunity

The technology is available for in-licensing.

Developmental Status

Species detection and differentiation has been evaluated using the real-time PCR technology with HRM on the LightCycler® 480 and the Magnetic Induced Cyclor from Bio Molecular Systems. Further clinical validation is ongoing.

Patent Situation

PCT patent application. Priority in 2018.

Further Reading

Burzykowski, Tomasz, *et al.* "High prevalence of foot diseases in Europe: results of the Achilles Project." *Mycoses* 46.11-12 (2003): 496-505.