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Histopathological diagnosis of onychomycosis using fluorescent stains

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Onychomycosis is a fungal infection of human nails that occurs worldwide and represents a major cause of abnormal nails. Although dermatophytes are the most commonly isolated microorganisms other filamentous fungi and yeasts may be involved. Histological evaluation of nail plate specimens, using routine stains, has been recommended for cases in which there is strong clinical evidence for onychomycosis, but false-negative results can be produced from fresh specimen preparations and fungal cultures. The Periodic-Acid-Schiff (PAS) stain is the most common method used in the histological evaluation of mycotic nail infections and was used in this study as "gold standard"; even so this staining procedure and its subsequent washing steps enhance the loss of specimen from the slides. In order to overcome the aforementioned problems formaldehyde-fixed paraffin-embedded nails were stained with Congo Red or Calcofluor White Stain, in a single-step staining for the rapid examination and detection of fungi. Considering all positive results obtained by PAS staining, the histopathological diagnosis provided by Congo Red was about 40 % being particularly successful in the detection of yeasts and saprophytes. Fungi filaments were easily detected by Calcofluor White Stain in all positive samples. The combined use of fluorochromes and histology provided a fast and simple single-step procedure for fungi detection in cases with clinical suspicion of an onychomycosis.