Co-infection of an *in vitro* oral epithelium by *Candida glabrata* and *Candida albicans*

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*Candida albicans* is regarded as the leading cause of candidosis. However, *Candida glabrata* has emerged as an important pathogen of oral mucosa, occurring both singly or in mixed species infections, often with *C. albicans*. Compared with *C. albicans*, little is known about the role of *C. glabrata* in oral infection. Thus, this work aimed to examine single and mixed species infection of oral epithelium involving *C. glabrata*, and to establish its ability to colonize, invade and damage an oral epithelium.

A reconstituted human oral epithelium (RHOE) was infected with *C. glabrata* (n=7), or with each *C. glabrata* plus one *C. albicans* oral isolate. The ability of both species to colonize and invade an oral epithelium was examined by confocal laser scanning electron microscopy (CLSM) using species-specific peptide nucleic acid (PNA) probe for distinguishing *C. glabrata* of *C. albicans* cells. Qualitative oral epithelial damage was assessed by determination of lactate dehydrogenase (LDH) released by the oral epithelium cells.

This work revealed that all *C. glabrata* strains were able to colonise the RHOE, however, in a strain dependent manner. *Candida glabrata* single infection after 12 h, revealed generally no invasion of the RHOE, which contrasted with extensive tissue invasion demonstrated by *C. albicans*. Mixed infection showed that *C. albicans* enhanced the invasiveness of *C. glabrata*, and led to increased LDH release by the RHOE, which confirms the results observed by histological studies.

Summarizing, the results suggest that there is an enhanced invasion and increased tissue damage caused by mixed *C. glabrata* and *C. albicans* infections, which has important clinical significance and highlights the need to identify *Candida* species involved in oral candidosis.