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## The role of *Candida* species in colonization, invasion and damage of an in vitro reconstituted human oral epithelium

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Oral candisosis is a common problem in immunocompromised patients, and whilst *Candida albicans* is regarded as the principal cause of infection, other *Candida* species are increasingly being recognized as human pathogens. Moreover, relatively little is known about the role of *Candida* species in oral infections. Thus, this work aimed to examine *Candida* species infection of oral epithelium, and to assess their ability to colonize, invade and damage an oral epithelium.The ability of *C. albicans, C. glabrata, C. tropicalis* and *C. parapsilosis* to colonize and invade a reconstituted human oral epithelium (RHOE) was examined by confocal laser scanning electron microscopy (CLSM). Simultaneously, the levels of lactate dehydrogenase (LDH) release by the epithelium cells were determined to access the extension of tissue damage. A comparison of *Candida* species was made in terms of secreted aspartyl proteinase (*SAP*) gene expression.CLSM images showed that all *Candida* species were able to colonize RHOE however this was in a species dependent manner. Low invasion of RHOE occurred with *C. parapsilosis* cells after 12h, whereas extensive tissue damage was evident after 24h when assessed by histological examination and LDH determination. Conversely, *C. tropicalis* and *C. albicans* cells exhibited higher tissue invasion after 12h, with extensive tissue damage occurring at 24h. Molecular analysis of *SAP* gene expression, for *C. tropicalis* and *C. parapsilosis,* suggested that Saps are not involved in invasion. In addition, pepstatin A (Sap Inhibitor) was unable to inhibit the invasion of RHOE by both species. Furthermore, after 24h of infection it was evident that a reduction of tissue damage occurred in case of *C. parapsilosis,* but not in case of *C. tropicalis.* These findings suggest that Saps could play an important role in tissue damage induced by *C. parapsilosis. C. glabrata* single infection studies revealed no invasion of the RHOE. Moreover, mixed infections showed that *C. albicans* enhanced the invasiveness of *C. glabrata*, and led to increase of LDH released by the RHOE, which paralleled the observed histiological damage. Overall, this work demonstrated that Saps are not involved in the invasion of RHOE by *C. tropicalis* and *C. parapsilosis* but seems to be highly responsible for tissue damage for *C. parapsilosis*. In addition we were able to demonstrate that *C. glabrata* alone is not able to invade RHOE however in presence of *C. albicans* causes significant tissue damage.