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Candida auris is highly virulent and can form biofilms: a new level of resistance

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Background: *Candida auris* is an emerging pathogen, first reported in 2009, and has attracted attention due to its reduced antifungal susceptibility. More recently, it has been detected in a UK ICU, where 20% of patients colonised developed candidaemia. The ability of *C. auris* to form biofilms and resist antimicrobial therapy and host responses has not been studied. Therefore, we assessed *C. auris* pathogenicity in the context of biofilm forming capacity, susceptibility to a panel of antimicrobials, and its virulence *in vivo*.

Material/methods: *Candida albicans* SC5314, *Candida glabrata* WT2001 and *Candida auris* M/67838 were used for minimum inhibitory concentration testing, for six antifungals in addition to chlorhexidine, following CLSI guidelines. Isolates were screened for biofilm formation, and sessile susceptibility testing performed. The *G. mellonella* model was used to assess pathogenicity *in vivo*.

Results: *C. auris* displayed intermediate biofilm formation, consisting predominately budding yeast and occasional pseudo-hyphae. Chlorhexidine was effective against *C. auris* biofilms unlike other antifungals, where >16 mg/L was required to kill the biofilm. Although *C. albicans* and *C. auris* had similar kill kinetics *in vivo*, *C. auris* infection achieved a 100% mortality rate more rapidly than *C. albicans*.

Conclusions: *C. auris* is able to form biofilms and resist antifungals that are active against its planktonic counterparts. These features not only contribute to its virulence, but also to its survival in hospital environments, increasing its ability to cause outbreaks. The results of the *in vivo* model mimic our clinical experience and highlight *C. auris* as a highly virulent species, equivalent to *C. albicans*.