

P2154 Low-level virulence of three fluconazole-resistant clinical isolates of *Candida* species as revealed by the *Galleria mellonella* model: a comparative study with a large number of clinical *Candida* isolates

Seung A Byun¹, Ha Jin Lim¹, Min Ji Choi¹, Dain Lee¹, Seung Yeob Lee¹, Eun Jeong Won¹, Soo Hyun Kim¹, Jong Hee Shin¹

¹ Chonnam National University Medical School, Gwangju, Korea, Rep. of South

Background: *Galleria mellonella* has been used to study microbial virulence and host defense. Herein, we evaluated the virulence of a large number of clinical isolates of the three common *Candida* species (*C. albicans*, *C. parapsilosis*, and *C. glabrata*) using the *G. mellonella* model; we focused particularly on strains exhibiting fluconazole-resistance (FR).

Materials/methods: A total of 120 clinical isolates (110 from blood and 10 from other sources), including 34 *C. albicans*, 50 *C. parapsilosis*, and 36 *C. glabrata* isolates, were evaluated. Of the 120 isolates, 47 exhibited FR as revealed using the Clinical and Laboratory Standards Institute M27A method. These included 12 *C. albicans* isolates harbouring the *Erg11p* mutation, 18 *C. parapsilosis* isolates with the Y132F mutation in *Erg11p*, and 17 *C. glabrata* isolates with *Pdr1* mutations. Virulence was determined by the survival rate (SR) of *G. mellonella* infected with the isolates. SR was monitored up to 72 h post-infection at 37°C.

Results: The mean SR of *G. mellonella* infected with *C. albicans* (15.7%) was significantly lower than that of *G. mellonella* infected with *C. parapsilosis* (72.9%) or *C. glabrata* (53.0%) (both $P < 0.0001$). For *C. albicans*, the mean SR of *G. mellonella* infected with 13 FR isolates was significantly higher than that of *G. mellonella* infected with 21 wild-type (WT) isolates (FR vs. WT, 27.8 vs. 9.1%, $P = 0.0032$). For *C. parapsilosis*, the mean SR of *G. mellonella* infected with 18 FR isolates was higher than that of *G. mellonella* infected with 32 WT isolates (FR vs. WT, 82.9 vs. 67.3%, $P = 0.004$). The SR results for *C. glabrata* were similar (FR vs. WT, 64.7 vs. 42.5%, $P = 0.0262$). Overall, the mean SR after infection with all 47 FR isolates was significantly higher than that after infection with all 73 WT isolates (FR vs. WT, 62.2 vs. 43.3%, $P = 0.0013$).

Conclusions: Clinical isolates of *C. albicans* were more virulent than isolates of *C. parapsilosis* or *C. glabrata* in the *G. mellonella* model. In addition, FR in most clinical isolates of all three *Candida* species may be associated with reduced virulence.

