

P0525 *In vitro* inhibition on biofilm production of *Candida* species by probiotic *Lactobacillus* strainsYeuk Lan Poon*¹, Mamie Hui¹¹ Department of Microbiology, The Chinese University of Hong Kong, Hong Kong, Hong Kong

Background: *Candida* biofilms have elevated antifungal resistance and are the possible sources of persistent *Candida* infections. In this study, we evaluated the inhibitory effects of three *Lactobacillus* strains on the formation of *Candida* biofilm.

Materials/methods: Three *Lactobacillus* reference strains (*L. rhamnosus* GG ATCC 53103, *L. acidophilus* ATCC 4356, and *L. plantarum* ATCC 8014) and seven *Candida* strains (*C. albicans* type strain SC5314, and 2 bloodstream isolates of each species of *C. albicans*, *C. tropicalis* and *C. parapsilosis*) were used in this study. Biofilm formation was performed using a 96-wells plate system. *Candida* cells (1×10^6 CFU in RPMI 1640) were first incubated in the wells for 90 minutes. Non-adherent cells were then removed by washing and culture medium replenished. Cell suspensions or cell-free supernatants (CFS) of the *Lactobacillus* strains were added to these wells. MRS broth was added as a control. The biofilms were incubated for 24 hours before being assessed by crystal violet staining and XTT reduction assay. Results of the experiment groups were expressed as a percentage of the control group and compared to the control using Student's t test.

Results: Cell suspensions of the *Lactobacillus* strains had little to none inhibitory effect on the biofilm formation, whereas CFS of *L. rhamnosus* GG (LGG) significantly reduced the biomass production and metabolic activities of *C. albicans* and *C. tropicalis* strains. The CFS of *L. plantarum* ATCC 8014 (Lp8014) also exhibited inhibitory effect, but to a lesser degree. In contrast, the *C. parapsilosis* strains were insensitive to CFS of LGG and Lp8014 but showed significant inhibition when incubated with cell suspension or CFS of *L. acidophilus* ATCC 4356 (La4356).

Conclusions: Our study demonstrated that CFSs of LGG and Lp8014 cultures possessed inhibitory effects on biofilm formation of *C. albicans* and *C. tropicalis*, whilst La4356 could inhibit *C. parapsilosis* biofilm by its cell suspension and CFS.

Figure. Inhibitory effects of CFS on biomass (A) and metabolic activity (B) of *Candida* biofilms. The results were presented as mean \pm SEM of triplicate experiments. Asterisk indicates statistically significant differences (*, $p < 0.05$; **, $p \leq 0.01$; ***, $p \leq 0.001$) compared to the control (100%).

