

World Congress on **Infectious Diseases**

August 10-12, 2015 London, UK

Fungicidal effect of bovine lactoferrin fragments in human pathogenic fungus (*Candida Albicans*)

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In this study, synthetic bovine lactoferricin (Lfcin B) 17-30 and lactoferrampin (Lfampin B) 265-284 were tested for antifungal activity against planktonic *Candida albicans* strain SC5314. Exposure of fungal cells to Lfcin B 17-30 brought about morphological changes demonstrating the presence of vesicles upon pseudohyphae or hyphae; alterations of plasma membrane permeability; and several hallmarks of apoptosis comprising phosphatidylserine externalization, reactive oxygen species (ROS) production, DNA fragmentation, changes in mitochondrial membrane potential and activation of caspase. From the aspect of gene expression, Lfcin B 17-30 probably brought about ROS accumulation by suppressing the expression of superoxide dismutase 3 (SOD3). In addition, the suppression of gene FRE7, CTR1 and SIT1 may be associated with changes of plasma membrane permeability. The minimal fungicidal concentration of Lfampin B 265-284 was determined to be 77.5µg/ml against *C. albicans* cells at a concentration of 1x10⁷ cell/ml. Lfampin B 265-284 exerted its antifungal effect mainly through necrosis and apoptosis. Lfampin B 265-284 brought about changes in the fungal membrane permeability and mitochondrial membrane potential and caspase activation. Treatment with Lfampin B 265-284 for 3 hours led to suppression of GPX2 and increase of PXP2, which are both related to oxidative stress.

This work was supported by National Science Foundation of China research grants (No. 81201270 and 81471927).

Biography

Jack Ho WONG received his PhD degree in biochemistry from the Chinese University of Hong Kong in 2005. He serves as a research associate in the Faculty of Medicine and Shenzhen Research Institute, CUHK. He has worked on defense proteins/peptides for over 10 years. His research encompasses: (i) antimicrobial peptides and (ii) antitumor proteins/peptides. He has published more than 80 papers in peer-reviewed journals.

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