EPISOMAL AND INTEGRATIVE DNA TRANSFORMATION IN *C. albicans* USING FROZEN EZ YEAST TRANSFORMATION KIT II

Hasna Ahmad[1], Ahmad Bazli bin Ramzi[2], Mohd Hafiz Arzmi[3,*]

[1]Kulliyyah of Allied Health Sciences, International Islamic University Malaysia
[2]Institute for Systems Biology (INBIOSIS), Universiti Kebangsaan Malaysia
[3]Kulliyyah of Dentistry, International Islamic University Malaysia

*Corresponding author email: hafizarzmi@iium.edu.my

ABSTRACT

C. albicans is an important opportunistic fungus that is virulent in immunocompromised individuals such as HIV, cancer or transplant patients. Transformation of *C. albicans* is fundamental to genetic manipulation of *C. albicans* since it lacks a complete sexual cycle. Homologous recombination is the predominant method for transformation and expression of exogenous DNA, however, the expression of episomal plasmids have been reported. Genetic transformation of *C. albicans* is traditionally done via lithium acetate/spheroplast/electoporation methods that are time- consuming and/or complicated. The Frozen EZ Yeast Transformation II kit is a fast, broad spectrum, high transformation efficiency method for preparing competent cells and performing multiple plasmid transformations in yeast cells. The kit allows for easier and more efficient yeast circular and linear plasmid transformations compared to protocols. However, its effectiveness in *C. albicans* has not been reported. Here we report transformation of circular episomal DNA and linear integrative DNA into *C. albicans* using the Frozen EZ Yeast Transformation II kit. Heat shock at 44 °C, overnight incubation and outgrowth step were added as modifications specific to *C. albicans* transformation to increase transformation efficiency using the kit. The results with and without modification to the general kit protocol were compared. Transformation efficiency of episomal DNA using the general kit protocol was 40%, while for linear DNA, transformation did not occur. Addition of *C. albicans*- specific steps to the transformation protocol increased transformation efficiency. In conclusion, the Frozen EZ Yeast Transformation II kit is suitable for *C. albicans* transformation of circular DNA. Addition of *C. albicans*-specific modification steps increases transformation efficiency of *C. albicans* using the kit.

Keywords: *C. albicans*, transformation, circular plasmid, linear plasmid, Frozen EZ Yeast Transformation II Kit