Air & Water Borne Diseases
ISSN: 2167-7719
2020
Sp. Iss. 108

Evaluation of antifungal activity of carbosilane cationic dendritic molecules against Candida albicans biofilms

Natalia Gómez-Casanova[1], José Luis Copa-Patiño[1], Sara Quintana Sánchez[2,3], Jorge Pérez-Serrano[1], Juan Soliveri[1], F. Javier de la Mata[2,3], Rafael Gómez[2,3], Irene Heredero-Bermejo[1]

[1] University of Alcalá, Spain.
[2] University of Alcalá, Spain.
[3]Institute "Ramón y Cajal" for Health Research (IRYCIS), Spain.

Abstract

Candida albicans is an opportunistic pathogen associated with biofilm formation. Biofilms are resistant to some antifungals [1,2] and contribute to increase mortality rates associated with fungal infections in hospitals [3]. Therefore, resistance and lack of effective molecules against biofilms make necessary to develop new biocides to prevent and treat Candida biofilm-related infections. In vitro activity of four dendritic molecules was tested against biofilm formation and biofilm formed in both clinical and CECT C. albicans strains. Dendrimers with the highest antifugal activity were also studied in combination with antifungals. Cell viability was evaluated using resazurin colorimetric assay and confirmed plating on agar plates. Cytotoxity was studied in human cell lines, and biofilm alterations were observed by scanning electron microscopy (SEM). BDSQ024 was the most active compound preventing biofilm formation, showing a minimum inhibitory biofilm concentration (MIBC50) of 4-8 mg/L. The minimum biofilm damage concentration (MBDC50) against biofilm formed was 8 mg/L. However, growth was observed when plating on agar plates, which showed that biofilm cell population was not completely eradicated.

Biography:

Irene Heredero Bermejo has completed her PhD on Health Science on December 2015 from Alcala University, Madrid, Spain. From 2017 to 2019, he joined Dr. Arrizabalaga laboratory for her postdoctoral studies at Indiana University School of Medicine, Indianapolis, USA. In 2019, she became an assistant professor at Alcala University. Her research interests include understanding the biology of infectious pathogens and discovering novel drug targets or compounds to develop new treatments. She has published 13 international papers, 2 book chapters and attended national and international meetings. She has been serving as reviewer in different scientific journals.

Speaker Publications:

1. "Ultrastructural Study of Acanthamoeba polyphaga Trophozoites and Cysts Treated In Vitro with Cationic Carbosilane Dendrimers"
2. "TgDrpC, an atypical dynamin-related protein in Toxoplasma gondii, is associated with vesicular transport factors and parasite division"
3. "Development of a new oxygen consumption rate assay in cultures of Acanthamoeba (Protozoa: Lobosea) and its application to evaluate viability and amoebicidal activity in vitro"

3rd International Conference on Clinical Microbiology, Virology and Infectious Diseases, Webinar- June 12-13, 2020

Abstract Citation:

Irene Heredero-Bermejo, Evaluation of antifungal activity of carbosilane cationic dendritic molecules against Candida albicans biofilms, Microbiology Meet 2020, 3rd International Conference on Clinical Microbiology, Virology and Infectious Diseases, Webinar, June 12-13, 2020

https://microbiology.vaccineconferences.com/