

**XIII**



**SIMPÓSIO BRASILEIRO DE  
MICROBIOLOGIA  
APLICADA**

# **ANAIS**

**PORTO ALEGRE, 25 A 27 DE MARÇO DE 2021**

**XIII**



**SIMPÓSIO BRASILEIRO DE  
MICROBIOLOGIA  
APLICADA**

**Editado por**

**Andreza Francisco Martins**

**Amanda de Souza da Motta**

**Patricia Valente da Silva**

**UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL  
PORTO ALEGRE, 25 A 27 DE MARÇO DE 2021**

**Anais**

**XIII**

**Simpósio Brasileiro de  
Microbiologia Aplicada**

**25 a 27 de março de 2021, Porto Alegre, Brasil**

**ISSN 2237-1672**

**Porto Alegre, Brasil**

**Universidade Federal do Rio Grande do Sul**

**2021**

### Photolysis of sodium chloride and sodium hypochlorite by ultraviolet light inactivates the trophozoites and cysts of *Acanthamoeba castellanii* in the water matrix

Beni Jequicene Mussengue Chaúque<sup>1,2</sup> and Marilise Brittes Rott<sup>1</sup>

([benichauq@gmail.com](mailto:benichauq@gmail.com))

<sup>1</sup> Department of Microbiology, Immunology and Parasitology, Institute of Basic Health Sciences, Universidade Federal do Rio Grande do Sul, Brazil.

<sup>2</sup> Universidade Rovuma, Niassa Branch, Lichinga City, Mozambique.

The present study aimed to investigate an effective, sustainable and accessible way to inactivate chlorine-resistant microorganisms such as *Acanthamoeba castellanii*, through the photolysis of sodium chloride (NaCl) and sodium hypochlorite (NaOCl) in the water matrix. The of trophozoites and cysts ( $2 \times 10^7$  per 8 mL) were exposed for 30, 60, 90, 120 and 150 minutes to the photolysis effect of NaOCl (1.0, 2.0, 4.0, 8.0 mg/L) or NaCl (5.0, 10, 20, 40 g/L) by ultraviolet light C ( $243 \mu\text{W} \cdot \text{cm}^2$ ), then the viability was analyzed. The inactivation of all trophozoites was achieved by exposure to the photolysis effect of 2.0 mg/L of NaOCl or 20 g/L of NaCl, in 150 or 120 minutes, respectively. Inactivation of all cysts was achieved by double exposure to the photolysis effect of 1.0 mg/L NaOCl or 5.0 g/L NaCl from 90 minutes of each exposure round. The exposure time was a strong determinant in the inactivation of *A. castellanii* trophozoites or cysts. The photolysis of NaOCl or NaCl is an effective method to eliminate *A. castellanii* in water. These findings expand the list of chlorine-resistant microorganisms that can be inactivated by NaOCl photolysis and shows that NaCl photolysis is a new and promising method for treating swimming pools water and wastewater.

**Keywords:** *Acanthamoeba castellanii*, disinfection, advanced oxidation processes, free-living amoebae, photolysis.

**Órgão de fomento:** CAPES