

PREVENTION MEASURES AGAINST CANDIDA AURIS DIFFUSION IN NOCOSOMIAL SETTINGS



De Santis C^{1*}, De Cristo A^{1*}, Lopuzzo M², Triggiano F³, Tafuri S³, Faggiano M E⁴, Dalfino L⁵, Dell'Aera M⁴, Caggiano G³

¹ School of Hospital Pharmacy - University of Bari Aldo Moro, Italy, ² Department of Precision and Regenerative Medicine and Ionian Area - University of Bari Aldo Moro, Italy, ³ Interdisciplinary Department of Medicine, Hygiene Section - University of Bari Aldo Moro, Italy, ⁴ Pharmacy Department – “Policlinico” University Hospital of Bari, Italy, ⁵ Anesthesia and Intensive Care Unit - University of Bari Aldo Moro, Italy * Authors contributed equally to this work

Background and Importance

Candida auris is a **multiresistant** yeast, which can colonize immunocompromised patients, causing **invasive** infections. Assuming its natural propension into developing **biofilm**, it can rapidly adapt to inert surfaces in hospital environments.



Aim and Objectives

Our objective is to identify proper **prevention measures** to be applied in nosocomial settings in order to counteract its diffusion, finding the most efficient **disinfectants** and creating guidelines to contrast *C. auris*-related infective emergencies.

Materials and Methods

The sensitivity of the following disinfectants was evaluated *in vitro* on clinical and environmental strains of *C. auris*:

- 1) quaternary ammonium in ethyl alcohol;
- 2) polyhexanide
- 3) sodium hypochlorite, sodium hydroxide, sodium carbonate and sodium chloride
- 4) phenols.

Disinfectants have been used following manufacturer instructions. Molecules efficacy was tested by **agar well diffusion method**. In particular, 90 mm diameter dish containing agarose soil with Sabouraud were contaminated with *C. auris* strains isolated from a colonised patient, the environment and ATCC standard strain. Then, on the seeded soils, 100 µl of each disinfectant was added to 10 mm diameter discs. After incubation at 37°C for 24/48 hours, the diameters of inhibition growth zones were measured. A growth zone of **> 14 mm** diameter was interpreted as **effective**.

Tested strains
<i>Candida auris</i> (strain A = ATCC)
<i>Candida auris</i> (strain B = nosocomial)
<i>Candida auris</i> (strain C = environmental)

Tab.1 – Tested *C. auris* strains

Results

All the tested disinfectants were efficient, with a significant growth decrease of *C. auris* with the following results:

- 1) quaternary ammonium: sensitive - inhibition diameter of **26 mm**
- 2) polyhexanide: sensitive - inhibition diameter of **17 mm**
- 3) sodium hypochlorite, sodium hydroxide, sodium carbonate and sodium chloride: sensitive – inhibition diameter of **50 mm**
- 4) phenols: sensitive – inhibition diameter of **26 mm**.

No significant difference was found in the sensibility between the clinical strain and the environmental one.

Tested disinfectants	Average of inhibition diameters (Ø)
Quaternary ammonium	26 mm
Polyhexanide	17 mm
Sodium hypochlorite, sodium hydroxide, sodium carbonate and sodium chloride	50 mm
Phenols	26 mm

Tab.2 – Mean inhibition values of tested disinfectants

Conclusions and Relevance

The highest inhibition was achieved with the **hypochlorite** disinfectant, followed by quaternary ammonium salt. These results showed the availability of many effective molecules on *C. auris* strains, simplifying the **periodic** disinfectant **replacement** to prevent **resistance** from genetically predisposed strains.

References and/or Acknowledgements

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Contact data

desantischiara98@gmail.com
aledecri98@gmail.com