ECCMID 2022
European Congress of Clinical Microbiology & Infectious Diseases
Lisbon, Portugal - 23rd to 26th April, 2022

Assessing the adhesion and invasiveness of *Prototheca* species towards murine keratinocytes

Krzysztof Zakrzewski[1], Angelika Proskurnicka[1], Agnieszka Kwiatek[2], Tomasz Jagielski[1]

[1] Department of Medical Microbiology, Institute of Microbiology, Faculty of Biology, University of Warsaw, Poland

[2] Department of Molecular Virology, Institute of Microbiology, Faculty of Biology, University of Warsaw, Poland

ECCMID 2022
European Congress of Clinical Microbiology & Infectious Diseases
Lisbon, Portugal - 23rd to 26th April, 2022

Background and Aim

- ***Prototheca*** **spp. are unicellular, chlorophyll-free microalgae widely distributed in the environment**
- **These microorganisms are the only known plants implicated in a range of clinically relevant opportunistic infections (protothecosis) in both humans and animals**
- **In particular, prototheca mastitis constitutes a major health and economic problem in dairy herds**
- **Our aim was to evaluate the ability and intensity of** ***Prototheca*** **spp. adhesion to murine skin cells**

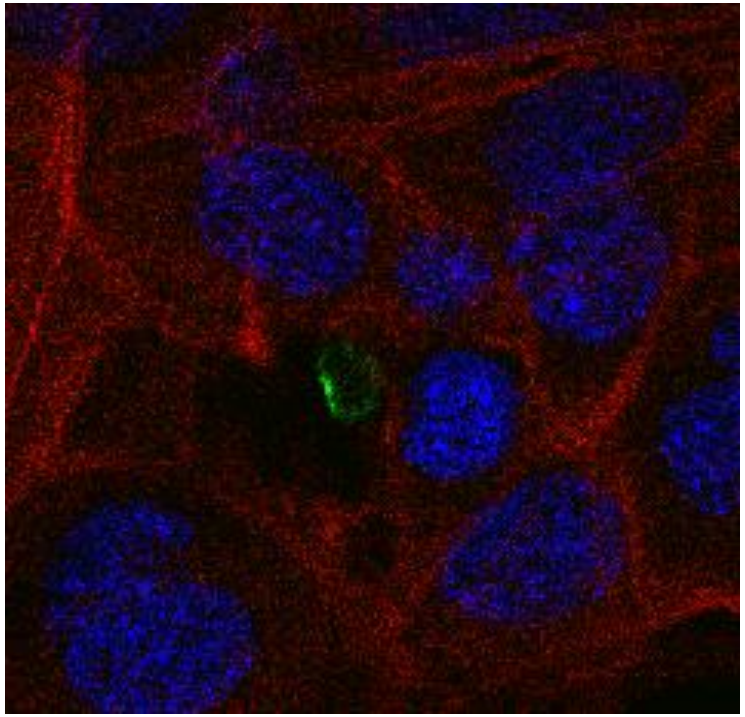

Fig. 1. ***Prototheca bovis*** **immunostained with Alexa Fluor 488 inside of murine Kera-308 cell whose cytoskeleton was stained with phalloidin and DNA with Hoechst.**

ECCMID 2022
European Congress of Clinical Microbiology & Infectious Diseases
Lisbon, Portugal - 23rd to 26th April, 2022

Methods

- Type strains of three pathogenic (*P. bovis*, *P. ciferrii*, *P. wickerhamii*) and one non-pathogenic (*P. stagnora*) *Prototheca* species were used to infect murine keratinocyte cell line (Kera-308) at a MOI of 0.2
- After 4 hrs of incubation at 37°C in 5% CO_2, the exposed cells were washed with PBS, lysed in 0.5% saponin, plated on Sabouraud Dextrose Agar (SDA), and incubated for 72 hrs at 30°C before counting of CFU of cell-adherent algae
- The sum of CFU from culture medium and from the cell lysates constituted the total CFU
- The level of *Prototheca* spp. adhesion was calculated by determining the adhesion percentage, which was expressed as the CFU of cell-adhered *Prototheca* spp. relative to the total CFU of *Prototheca* spp.

ECCMID 2022
European Congress of Clinical Microbiology & Infectious Diseases
Lisbon, Portugal - 23rd to 26th April, 2022

Results

- **The mean adhesion percentages for pathogenic species were as follows: 10% – *P. wickerhamii*, 23% – *P. bovis*, 29% – *P. ciferrii* 29%**
- ***P. stagnora* showed the weakest adherence towards Kera-308 cells (3%)**