Identification of *Prototheca* species isolated from mastitis cases in Poland

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Introduction and Aim. Algae of the genus *Prototheca* are unicellular, achlorophyllic yeast-like organisms, ubiquitously distributed in the environment [1]. Four of the six currently postulated species, namely *P. zopfii* (genotype 1 and genotype 2), *P. wickerhamii, P. blaschkeae,* and *P. cutis* are pathogenic to humans and animals, being the causative agents of protothecosis. The most prevalent form of animal protothecosis is bovine mastitis (mainly caused by *P. zopfii* genotype 2 and *P. blaschkeae*). The aim of this study was to investigate the distribution of *Prototheca* species/genotypes among strains isolated from protothecal mastitis cases in dairy cows in Poland.

Materials and Methods. One hundred of *Prototheca* strains isolated between 2004 and 2015 from bovine mastitis cases in Poland (originated from 29 different dairy herds and 9 voivodeships) were included in the study. All strains were collected and classified to the genus level using phenotype-based approaches. The investigated *Prototheca* strains were cultured aerobically on Sabouraud Dextrose Agar plates for 72 h at 25^{o}C. Genomic DNA was extracted using Bacterial & Yeast Genomic DNA Purification Kit (EURx). Species identification was carried out using genotype-specific PCR assays for *P. zopfii* genotype 1, *P. zopfii* genotype 2, and *P. blaschkeae* (formerly *P. zopfii* genotype 3) as described previously by Roesler *et al*. [2].

Results. Among a hundred strains tested, 97 showed indistinguishable patterns characteristic for *P. zopfii* genotype 2. Two isolates exhibited the *P. zopfii* genotype 1 specific pattern. Only one isolate presented pattern specific for *P. blaschkeae* (formerly *P. zopfii* genotype 3).

Conclusion. This study demonstrates that *Prototheca* strains isolated from mastitis cases in dairy cows in Poland are almost exclusively *P. zopfii* genotype 2. The high detection rate of *P. zopfii* genotype 2 in clinical samples support previous observations that protothecal bovine mastitis is mainly caused by this genotype [3-5]. This is probably due to a particular ability of *P. zopfii* genotype 2 for colonization and/or infection of the dairy cows.

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References

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