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The oxidative stress response of oxytetracycline in the ciliate *Pseudocohnilembus persalinus*

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Highlights

- Toxicity of oxytetracycline was studied on ciliates
- The effects on growth in ciliates species was observed
- Resulted in the differential enzyme activity levels and transcription of genes related to antioxidative defense system.
- Caused cell deformed and damage.

Abstract

Oxytetracycline (OTC) is commonly employed in fish farms to prevent bacterial infections in China, and because of their widely and intensive use, the potential harmful effects on organisms in aquatic environment are of great concern. Ciliates play an important role in aquatic food webs as secondary producers, and *Pseudocohnilembus persalinus*, is one kind of them which are easily found in fish farms, surviving in polluted water. Therefore, using *P. persalinus* as experimental models, this study investigated the effects of oxytetracycline (OTC) on the growth, antioxidant system and morphological damage in pollution-resistant ciliates species. Our results showed that the 96-h EC_{50} values for OTC of *P. persalinus* was 21.38 mg L^{-1}. The increased level of SOD and GSH during 96 h OTC stress was related to an adaptive response under oxidative stress induced in ciliates. Additionally, *sod1, sod2* and *sod3*