

**Enhancement of solar disinfection of drinking water against  
the waterborne enteroparasite *Cryptosporidium*  
by addition of peroxymonosulfate**

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Nowadays, more than 2000 million people in the world are using contaminated water resources, which leads to a significant risk for infectious diseases transmission. Solar disinfection method (SODIS) is a simple, cheap, and sustainable solution that enhances microbiological quality of drinking water at home level. In the present study, the addition of peroxymonosulfate (PMS) was evaluated to improve the efficacy of SODIS against the enteroparasite *Cryptosporidium parvum*, which was chosen by the World Health Organization as the reference pathogen for the waterborne protozoa group in the assessment of household water treatment systems. For this purpose, quartz tubes containing 3 mL of bi-distilled water with different concentrations of PMS (0.1, 0.5, 2.5 and 5.0 mM) and/or Fe<sup>2+</sup> (1.8 µM) were contaminated with 2 million oocysts/mL of *C. parvum* and exposed to simulated solar radiation (40 W/m<sup>2</sup>, 290-390 nm) at a temperature of 40 °C. Samples were taken at 1, 2, 4 and 6 hours and the oocyst viability was evaluated by *hsp70* mRNA quantification through reverse transcription qPCR, previous 42 °C induction and subsequent mRNA extraction. The results obtained shown a decrease in oocyst viability of ≥4 log reductions with PMS concentrations of ≥0.5 mM after exposure time of 4 hours. In conclusion, addition of PMS enhances and speeds up the inactivation of *Cryptosporidium* oocysts by SODIS procedures/method, providing a high protection against waterborne protozoan diseases.

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