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Novel nitazoxanide nanoformulation ameliorates experimental cyclosporiasis

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Cyclosporiasis is an infection that possesses a worldwide spread. It is caused by a protozoan parasite known as *Cyclospora cayetanensis* (*C. cayetanensis*). The disease is manifested by a severe diarrhea which can unfortunately lead to death in immunocompromised individuals. The currently available treatment regimens have either low efficacy or severe adverse effects. In the current work, a novel nano-formula of nitazoxanide (NTZ)-loaded nanostructured lipid carriers (NLCs) was evaluated for the treatment of *C. cayetanensis* in both immunocompetent and immunosuppressed mice compared to currently available drugs (trimethoprim-sulfamethoxazole and NTZ). The results proved that NTZ-loaded NLCs showed the highest statistically significant drug efficiency exceeding 98% in both immunocompetent and immunosuppressed mice indicating powerful tissue penetration. Scanning electron microscope examination of the oocysts illustrated that those treated with NTZ-loaded NLCs were the most deformed with rupturing ultrastructure. In conclusion, the novel nanoformulation exhibited a remarkable potency in the treatment of cyclosporiasis where its anti-parasitic safe nature introduces an auspicious vista in the treatment of human cyclosporiasis.

Biography

Nancy Abd El-Kader Hagra received the B.Sc in Pharmacy and Biotechnology, from German University in Cairo, Egypt in 2010. She received the M.Sc and Ph.D degrees in Applied and Molecular Parasitology, Alexandria University, Egypt, in 2014 and 2018 respectively. She is currently an Assistant Professor in Pharos University in Alexandria. Her research interests cover several aspects across parasitology, nanotechnology and molecular biology aiming to create new diagnostic and treatment pathways in order to improve the health and wellbeing.