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'De Novo' Repurposing of Daflon as Anti-Intestinal Parasitic Drug in Experimental Giardiasis

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Abstract

There is a necessity to develop or discover an alternative drug to combat the drug-resistance by Giardia duodenalis and minimize the conventional drug administration's multiple doses and frequency. Progressive repositioning or 'repurposing' of drugs has become widespread due to economic circumstances and medical emergency needs. Daflon 500 mg (DFL) is a natural product used safely as a nutrient supplement and an anti-diabetic drug in many European countries and the US. This study aimed to investigate the efficiency of DFL, in vivo, in a murine model as a safe alternative or co-drug for giardiasis. Therefore, Swiss Albino mice (n=32) were inoculated with 1x104 Giardia cysts and assigned to four groups: One group was the infected non-treated control mice, and three experimental groups were treated differently, either with Metronidazole (MTZ), DFL, or combined therapy of DFL/MTZ. Besides, 8 normal mice served as a control group. All mice were sacrificed 13 days post-infection for the parasitic, histopathological, and oxidative stress analysis. The data collected from MTZ, DFL, and the combined therapy showed a significant dip in the trophozoites and cysts count compared to their counterparts of the infected mice. The histopathological analysis of the small intestines of the mice treated with the combined therapy retained normal intestinal architecture and normal levels of malondialdehyde (MDA), superoxide dismutase (SOD), and glutathione. In conclusion, this study indicated promising actions of Daflon 500 as an anti-giardiasis drug. The results demonstrated its potential effect in improving the intestinal epithelial tissue and disturbing the Giardia stages, when it was taken collectively with Metronidazole.

Keywords:

Giardia, anti-giardiasis, repurposing, Daflon, histopathology.

Biography

Dr. Gehan Labib Abuelenain is an Associate Professor in Fatema College of Health Sciences, United Arab Emirates. She also worked as an Associate Professor in Parasitology Lab, Department of Immunology and Drug Evaluation, Theodor Bilharz Research Institute, Imbaba, Egypt.