Evaluation of mono and combined nitrofurantoin therapy for toxoplasmosis *in vivo*

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Toxoplasmosis is a commonly frequented disease with an estimated prevalence of more than one billion human cases worldwide and over one million new infections each year**.** It is classified as the second most common cause of deaths and the fourth leading cause of hospitalizations attributed to foodborne diseases. The disease may pass unnoticed in healthy individuals but could be fatal in the immunocompromised. Available anti-*Toxoplasma* drugs are associated with many side effects. Therefore, search for new more reliable, more efficient, and less toxic therapeutic agents is a continuous endeavor.

This study assesses the potential use of nitrofurantoin, a compound with well-established antimicrobial properties, as a potential anti- *Toxoplasma* drug *in vivo*. It compares its efficacy to the commonly used anti-*Toxoplasma* agent spiramycin by molecular and histopathological methods in acute and chronic infection.

The results demonstrate a significant ability to eliminate the parasite (P<0.001) whether used as mono- or combined therapy with spiramycin in the acute and chronic stages. When compared to the anti- *Toxoplasma* drug spiramycin, nitrofurantoin achieved similar efficacy in the acute and chronic infection (P =0.65 and P =0.096, respectively). However, better results were obtained when using a combination of both drugs (P<0.001). Additionally, nitrofurantoin showed good inhibitory effects on the inflammatory process in the liver, kidney, and uterus of the experimentally infected animals.

Nitrofurantoin can be considered as a potential anti-*Toxoplasma* agent. Nevertheless, further studies are recommended before consideration for clinical trials.