TITLE: TOXICOLOGICAL SCREENING OF POLYMERIC NANOPARTICLES FOR COCCIDIOSIS TREATMENT

INTRODUCTION: Coccidiosis, caused by intracellular protozoa of the genus *Eimeria*, affects the gastrointestinal tract of poultry, causing significant damage to animal health and poultry production. The disease is traditionally controlled with anticoccidial drugs; however, increasing resistance to conventional drugs reinforces the need for more effective therapeutic strategies. Nanotechnology presents itself as a promising alternative to increase efficacy, reduce toxicity and optimize administered doses. Despite the emerging applications of this technology in poultry farming, its use is still limited and little explored. **OBJECTIVE:** This study aimed to develop and characterize blank nanocapsules of Eudragit RS 100 and perform a toxicological screening using the alternative *C. elegans* model for future incorporation of an anticoccidial drug. **MATERIALS AND METHODS:** The nanocapsules were prepared by interfacial deposition of preformed polymer. They differ on the content of their core-forming oil, which includes MCT (NB1) and MCT and *tea tree* oil (NB2). Particle size was characterized by laser diffraction (LD) and photon correlation spectroscopy (PCS), while zeta potential was measured by electrophoretic mobility. These parameters were monitored over 30 days to assess stability. For toxicological evaluation, N2 (wild-type) strains were used, maintained in nematode growth media and *Escherichia coli* OP50. The worms were synchronized and treated at the L1 stage, chronically (48h) with NB1 and NB2 at 5 concentrations. After the end of treatment, we analyzed survival rate and body length. **RESULTS AND CONCLUSION:** The volume-weighted mean diameter (D[4,3]) determined using LD was lower than 131nm (Span ± 0.83) for both formulations, while the z-average size determined by PCS ranged from 99 and 113nm. The zeta potential was +6.45 ± 0.69 mV and +4.85 ± 0.08 mV, for NB1 and NB2, respectively. Both formulations have been physically stable over 30 days. We observed that neither treatment caused mortality in *C. elegans* in the concentrations tested. In addition, a decrease in body length was observed from $1.6x10^{12}$ particles/mL for NB1 and $1.9x10^{12}$ particles/mL for NB2. In conclusion, both developed formulations presented adequate physical-chemical properties and physical stability for at least 30 days. However, additional experiments are being conducted to confirm the safety of this inedited formulation.

KEY-WORDS: Nanotechnology; Nanotoxicology; *C. elegans*.