

Determination of Percent Decortication of *Ascaris lumbricoides* Eggs: A Preliminary Step to Glycan-Gold Nanoparticle Conjugation

Miyu Jazmin L. Lu *

Department of Medical Technology, Faculty of Pharmacy, University of Santo Tomas, Philippines

Olivia Alyn D. Tabag

Department of Medical Technology, Faculty of Pharmacy, University of Santo Tomas, Philippines

Daniella Renee N. Ty

Department of Medical Technology, Faculty of Pharmacy, University of Santo Tomas, Philippines

Madeleine Gabrielle C. Uy

Department of Medical Technology, Faculty of Pharmacy, University of Santo Tomas, Philippines

Minerva L. Daya

Department of Biochemistry, Faculty of Pharmacy, University of Santo Tomas, Philippines

Gregorio L. Martin I

Department of Medical Technology, Faculty of Pharmacy, University of Santo Tomas, Philippines

Abstract

This study investigates the percent decortication of *Ascaris lumbricoides* eggs after being subjected to a treatment of 6% sodium hypochlorite solution for different lengths of time. Low-intensity helminth infections, which result in fewer parasitic eggs being visible in patient fecal samples, are more easily missed due to most gold-standard methods involving direct microscopic observation of the eggs. One method for more easily identifying a small number of eggs in patient samples is glycan-gold nanoparticle conjugation. However, these nanoparticles can only be conjugated effectively to the shells of eggs that have had their outer mammillary layer removed. Corticated *Ascaris lumbricoides* eggs isolated from fecal samples were placed in microtiter wells and treated with a 6% sodium hypochlorite solution. Different wells were then subjected to incubation times of 5, 10, 15, 20, 25, and 30 minutes, after which they were examined for the percentage of eggs decorticated by the treatment. Fisher's exact test was utilized to determine if there was a significant difference in the percentage of eggs decorticated in the treated wells compared to the untreated wells, as well as in the wells subjected to different incubation times. None of the treated eggs incubated for 5 minutes were decorticated unlike those that were incubated longer for 30 minutes which present a significant difference (p-value < 0.05). This is suggestive of a time-dependent manner of decortication. In conclusion, an incubation time of 10 minutes or longer is sufficient to decorticate an adequate number of eggs for glycan-gold nanoparticle conjugation.

Keywords

Decortication, *Ascaris lumbricoides*, STH, glycan-gold nanoparticle.