

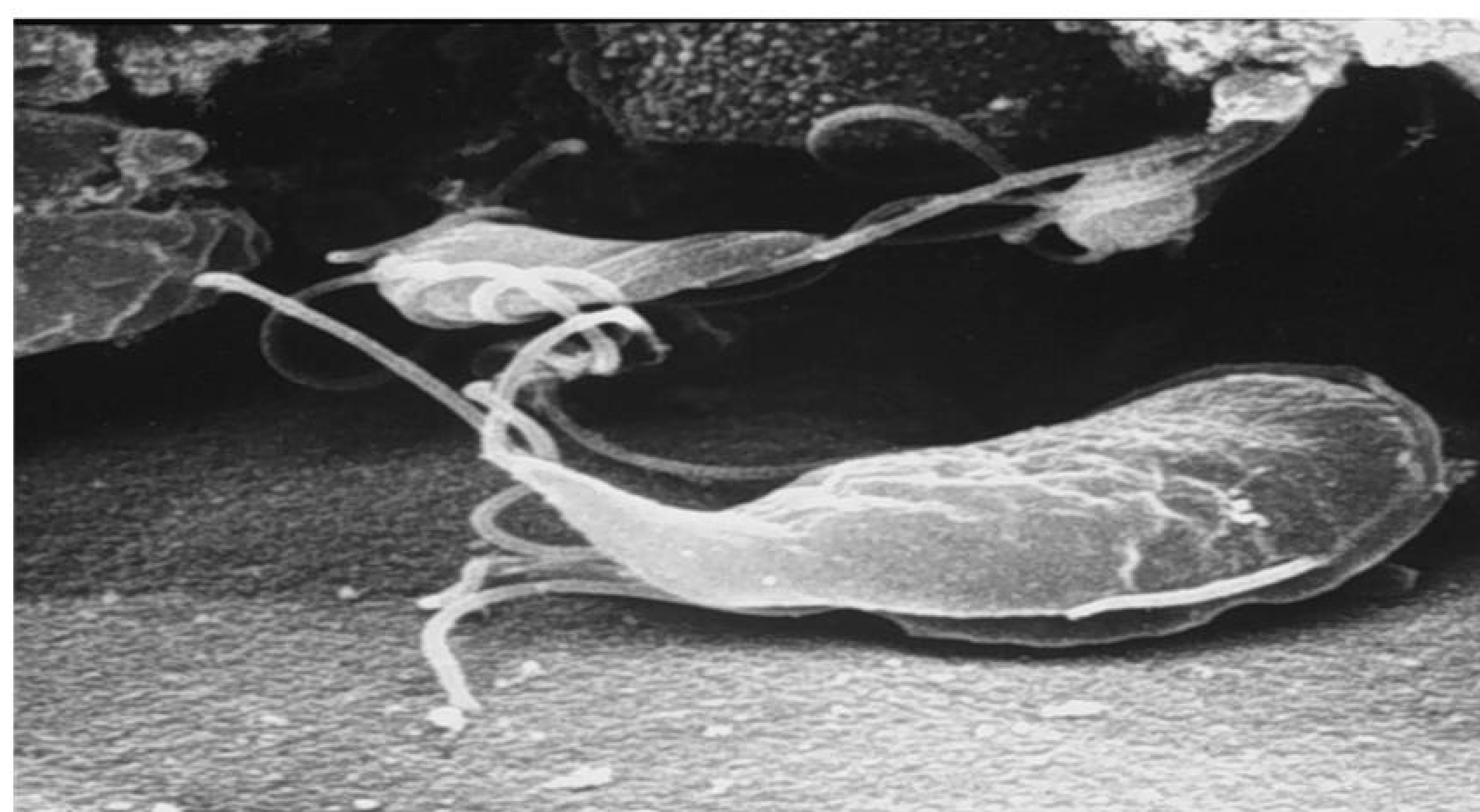
Effects of Nitrosylation on the activity of Glucosamine 6 Phosphate Isomerase in *Giardia*

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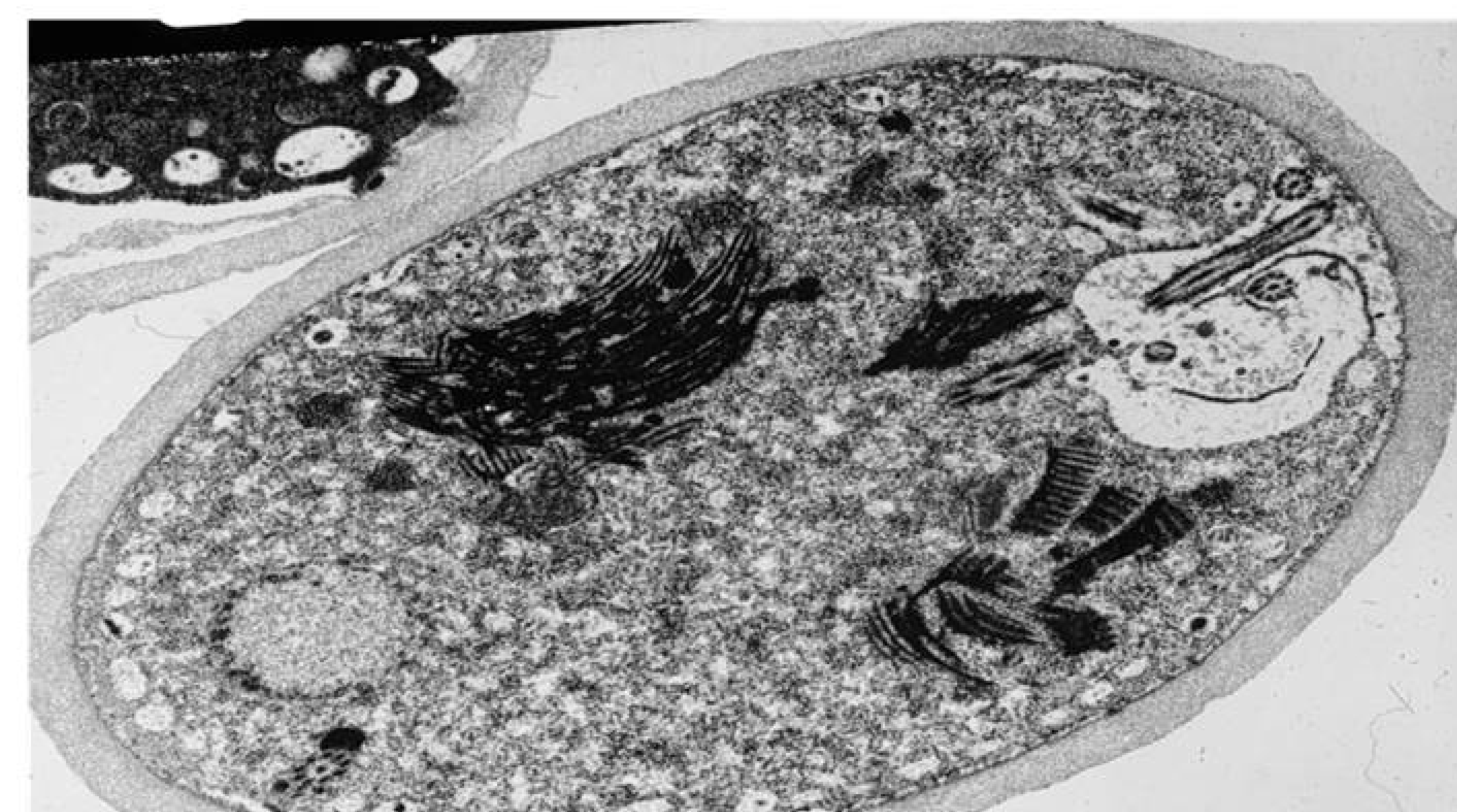
Importance of the work

Giardia is a flagellated unicellular eukaryotic microorganism that resides and reproduces in the small intestine. It commonly causes diarrheal disease specifically giardiasis. Giardiasis is the frequent reported diarrheal disease worldwide. According to reports, about 200 million people are infected every year. In the United States, almost every faeces specimen submitted for parasitological experiment contains either *Giardia* trophozoite or inactive cyst. Giardiasis exist in two developmental stage; as trophozoite which is the vegetative stage



Dorsal View of *Giardia* Trophozoite

In order for this organism to survive under unfavorable condition, it undergoes various biological transformation to transform itself into inactive cyst.



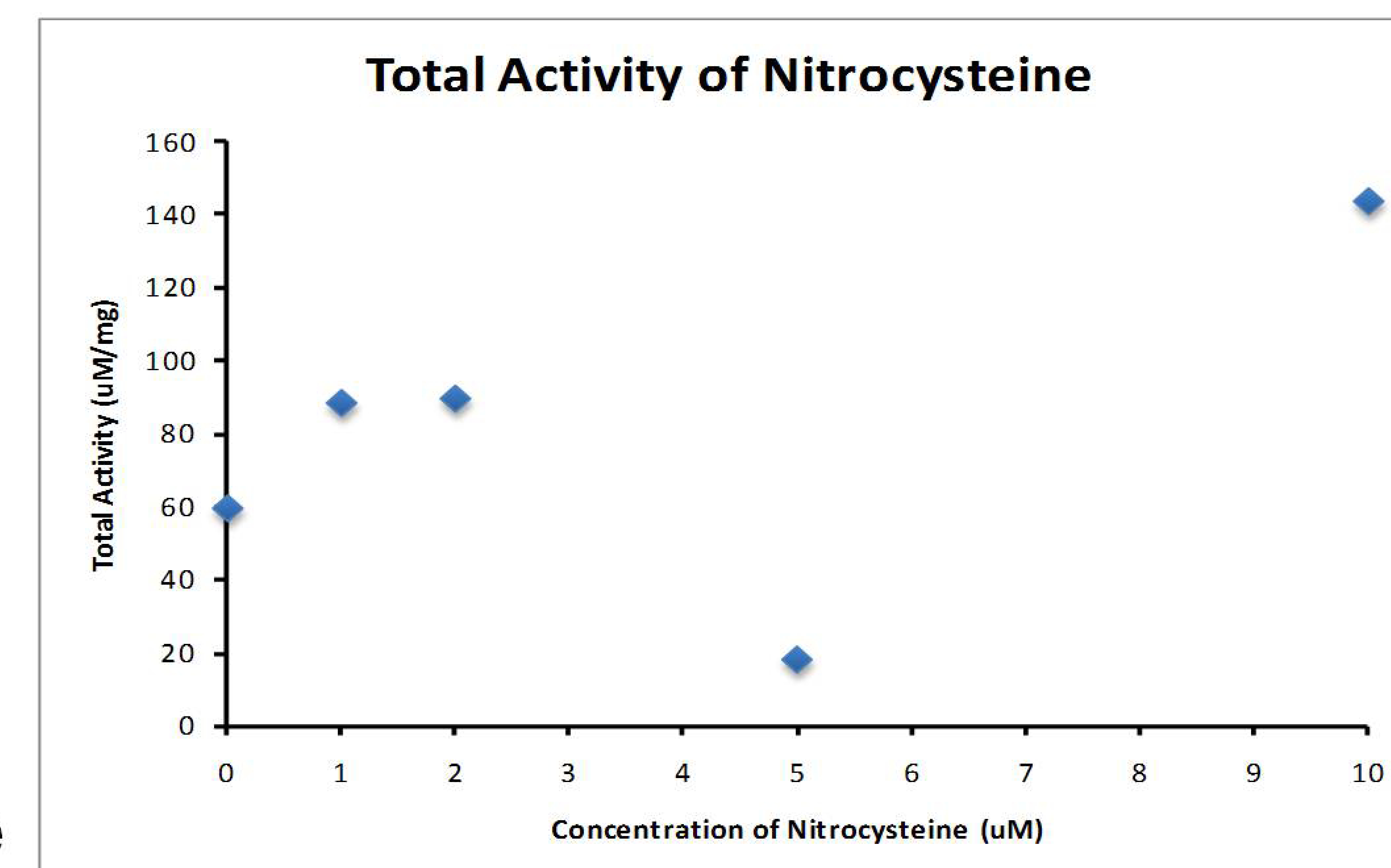
TEM of Intact *Giardia* Cyst

This transformation is a result of a series of linked processes and the induction of a pathway for the production of the cyst wall carbohydrate which is in part regulated by glucosamine-6-phosphate isomerase. The aim of the research was to determine if nitric oxide produced by *Giardia* induces glucosamine-6-phosphate during the synthesis of the cyst wall during encystment.

Experimental design

We performed enzyme-substrate assays using glucosamine-6-phosphate isomerase (enzyme) and fructose-6-phosphate (substrate). We added different concentration of nitrosyl L-cysteine (a stable source of nitric oxide) to find out how nitric oxide will affect the activity of a key enzyme in encystment, glucosamine-6-phosphate isomerase.

Result and Conclusion



Before the research we hypothesized that nitric oxide produced by *Giardia* should not impact on the activity of the enzyme glucosamine-6-phosphate during encystment. The above result does not support the hypothesis

References

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Giardia Metabolism, E Jarroll, H Van Kleulen, T A Paget and D Lindmark

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