

Microfibers of the Gut and Gills of Sardine, *Sardina pilchardus*

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INTRODUCTION

- A microfiber is a microscopic strand of plastic measuring under 5µm long
- Microfibers contribute to ocean pollution
- Our clothes are the main source of microfibers since they end up in the ocean primarily through washing machines
- Fibers are ingested by living organisms, like fish
- Species observed is *Sardina pilchardus* also known as *pilchards*

AIM

- Investigate and quantify the number of microfibers found in the digestive tract and gills of the Sardine fish, *Sardina pilchardus*
- It was expected that there would be more microfibers in the digestive system due to the fish ingesting more microfibers than would pass through their gills

METHOD

- Fish dissected to remove gills and digestive tract
- Mashed up organs in a mortar and pestle

METHOD

- Placed both samples in saltwater for 24 hours
 - saltwater allows fibers to float to top of solution
- Samples were filtered through a filter paper using a vacuum pump
- Filter paper was examined using a microscope
 - number of microfibers were counted as well as the color
 - microfibers were sorted into size between short and long
- T-test conducted to determine statistical significance

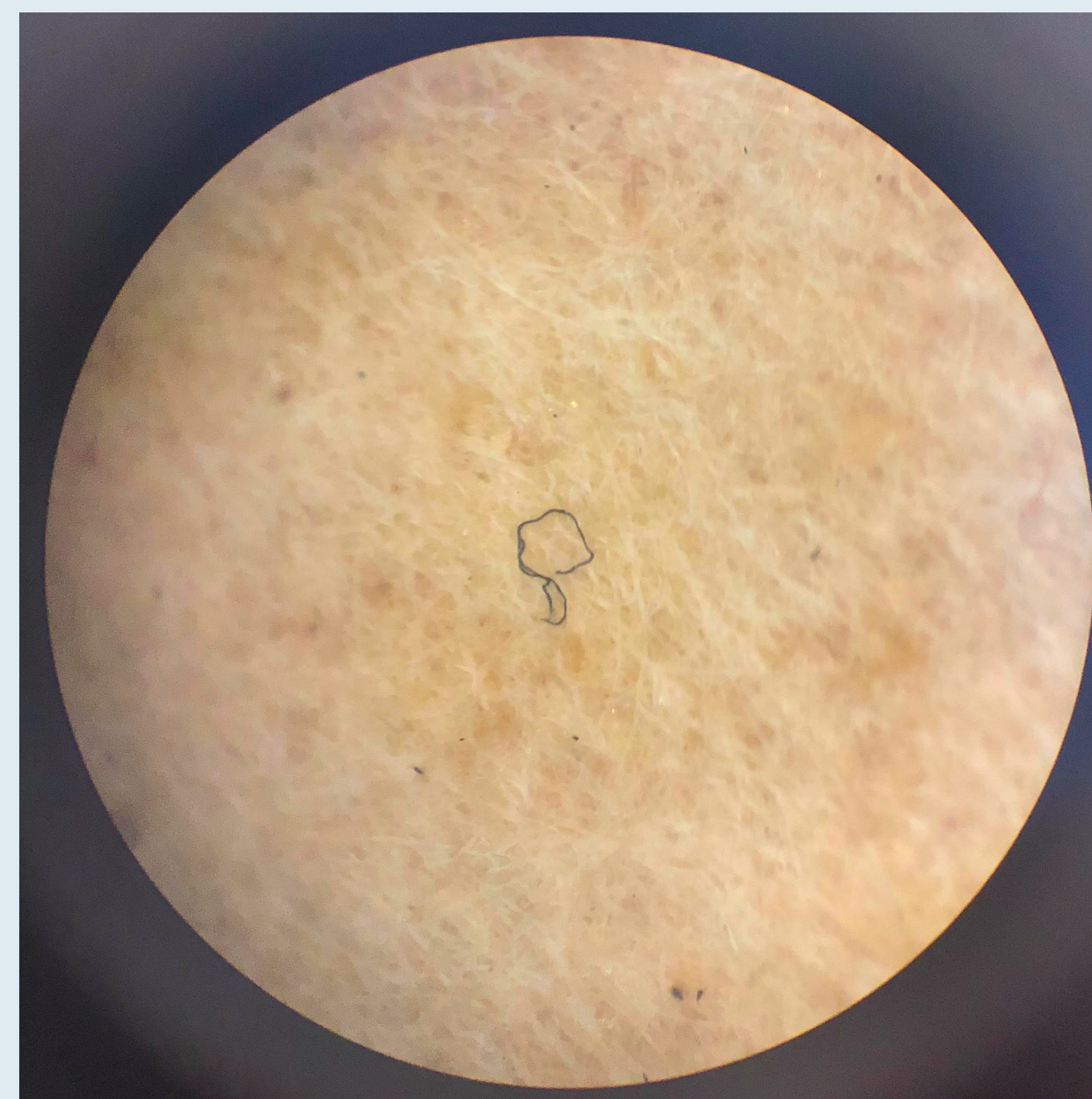


Image 1. Photograph of a single black microfiber observed on filter paper through a microscope. Microfiber found on the gut of the *Sardina pilchardus*.

RESULTS

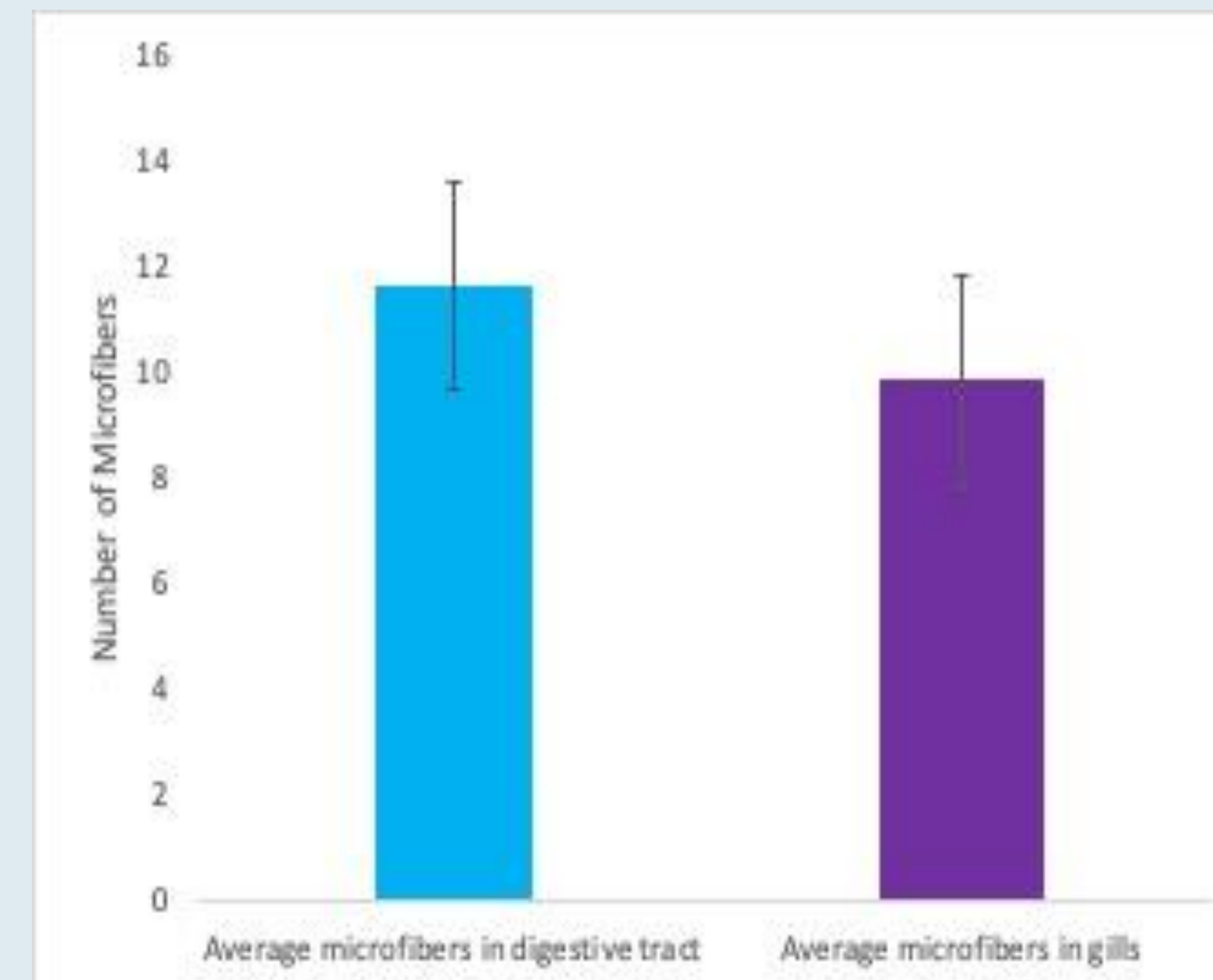


Figure 1. Bar graph showing mean number of microfibers found in the digestive tract and gills of the *Sardina pilchardus*. Error bars indicate 95% confidence interval. N=49

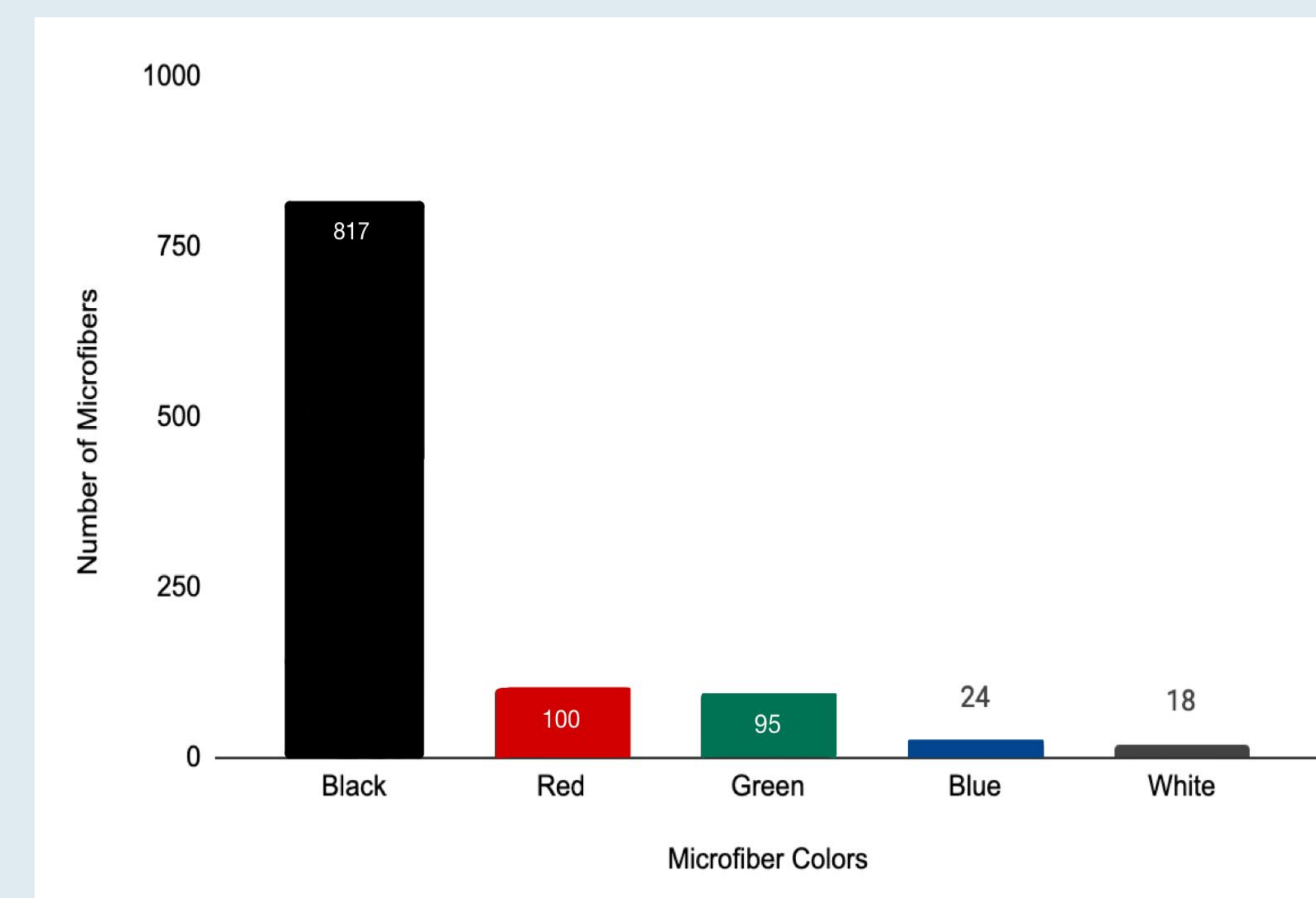


Figure 2. Bar graph illustrating total number of microfibers found in each color.

CONCLUSION

- No statistical difference was found, since p-value was 0.13 ($p > 0.05$)
- Majority of microfibers were black and the least frequent color observed was white
- It is important to note that of the forty-nine fish that were sampled, all contained multiple microfibers of various sizes and colors.

ACKNOWLEDGEMENTS

I would like to thank **ALLIES in STEM**, California Lutheran University, Office of Undergraduate Research and Creative Scholarship, Andrea Huvard, Ph.D and Brian Swig, Ph.D. As well as my lab partners Steven Hernandez and Keury Hernandez.

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