



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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Project Title Tannins from Indian Almond Leaves that Alters Pregnancy Behaviors, Gestation Period, and Fertility Structure of Guppies	
<p style="text-align: center;">Abstract</p> <p>Objectives We are studying the tannins from the Indian almond leaves that alters the pregnancy behaviors, gestation period, and fertility structure of <i>Poecilia reticulata</i>; guppies. The purpose of this study is to potentially produce cheaper fish at a faster rate, being applied to large guppy farms/ breeders and the aquarium hobby. In our economy today, we suffer from limiting food sources including large proteins like steak. We're making these food harder to obtain for other species like reptiles. Once stabilizing guppy breeding, it has the potential to become a primary, nutritious protein source for many animals. We hypothesize that the tannins from the Indian almond leaves will overall be beneficial to the guppies' reproduction, as it contains a richness of chemicals and tannins, as well as antioxidants and antibacterial properties.</p> <p>Methods Through research we specifically chose ten properties to collect data during our experiments such as: Gestation, Pregnant Belly Size, Swimming Patterns, Eating Frequency, Pregnancy Rate, Number of Fry, Time for the Fry to Mature, Fry Size, Fry Coloration, & Time for Females to Recover from Delivery. For our experiment, we first set up 3 identical 29 gallon tubs with identical filtration, heaters, etc. Then we added 10 grams of Indian almond leaves in 2 of the 3 habitats. After we released 5 female and 3 male fancy yellow guppies into each habitat. Lastly, we began to collect data as breeding stimulated. We did two trials in total, each trial was 6 weeks along with maintenance throughout accomplishing 6 experiments.</p> <p>Results In result, the Indian almond leaves were beneficial to the guppies' reproduction. The leaves shortened the gestation period by about a week and doubled the pregnancy rate. The number of fry also dramatically increased as the average fry per litter doubled. Lastly, the time that the females took to recover from delivery shortened significantly about half the time. Our data also indicated that the leaves didn't affect the fry's health.</p> <p>Conclusions Our data supported our hypothesis and we can apply our discoveries to guppy farms/breeders, producing fish at a faster rate using these biodegradable, organic leaves. In the future, we would like to test these leaves on market fish, like tilapia, salmon, and bass. If we are able to increase the reproduction of these fish, it can revolutionize our economy, as well as benefiting our environment.</p>	
Summary Statement We were able to successfully increase the reproduction of guppies dramatically by introducing organic and biodegradable Indian almond leaves, releasing tannins, that alters the pregnancy behaviors, gestation period, and fertility structure.	
Help Received We didn't receive any assistance for this project and the experiments. However, we wouldn't have completed the project financially without the help of our parents.	