The Effect of Tetracycline, Azithromycin, and Hypothermia on Populations of Naegleria lovaniensis

Du, Joseph

Naegleria fowleri is the cause of Primary Amoebic Meningoencephalitis (PAM), a deadly disease that mainly affects poorer nations and is very difficult to treat properly. This experiment is meant to test the efficiency of commonly accessible treatments on Naegleria lovaniensis, a non-pathogenic relative of N. fowleri. Over two trials, the experiment tested the effects of tetracycline, azithromycin, and hypothermia on populations of N. lovaniensis and measured the changes in its population. Populations were grown on bacterial lawns of Citrobacter freundii to ensure a food source, and after three days of incubation, were measured using a microscope for initial populations. They were then treated with solutions of 50 microliters of drug and/or grown at 21 degrees Celsius, depending on the treatment. After three days of treatment, final population counts were taken and noted as a percentage of the original. Changes were noted as 433%, 100%, 350%, 20%, -36.36%, -33%, 300%, -25%, 0%, -66.67% for each of the two trials of control, azithromycin, tetracycline, all treatments, and hypothermia, respectively. This data was analyzed using four two sample t-tests that assumed equal variance comparing each variable group to the control, resulting in all data measuring greater than the alpha value of .05. As all the data is not statistically significant, the research hypothesis “if N. lovaniensis treated with azithromycin, tetracycline, and hypothermia simultaneously, then the population of amoeba would be significantly lower” was not supported. In summary, data from this experiment was insignificant, and will require further testing to be meaningful.

Awards Won: