Chronic Alcohol Treatment Results in Physiological Tolerance, Decreased Fertility, and Liver Injury in Drosophila

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In America nearly 14 million people abuse alcohol and suffer from alcoholism. Moreover, nearly 6.6 million children under the age of 18 have at least one parent that is an alcoholic. The effect of this shocking statistic is pervasive because some of the main problems in alcoholic families are a lack of communication, poor parenting skills, no structure or discipline, poor role modeling, aggressive behavior, and many financial problems which leads to a more stressful life. I chose to research this topic because I personally have a high degree of interest in genetics and the effects of alcohol abuse on fertility. I hypothesized that chronic alcoholism, as opposed to social drinking would lead to an impairment of fertility. My findings were quite interesting. I found the highest egg weight was observed in eggs laid from chronic alcoholics compared to eggs laid from wild-type, non-alcoholics. In addition, flies that occasionally drank alcohol (social drinkers) laid the highest number of eggs that reached the pupal stage in comparison to the control flies. However social drinkers exhibited the second lowest egg weight of all the case studies. When looking at the number or flies that reached adulthood from the pupal stage, the chronically alcohol-treated flies had the highest number of adult flies with a 93.63% hatch rate. The control treated flies had the lowest numbers of all of the study but, had the highest hatching rate of 98.982%. Examining the remaining data, I came to find that females drinking alcohol who were pregnant (denoted as “Alcohol” group in the figures) had the third highest hatching rate of 81.42%. Surprisingly, the social alcoholic group had the lowest hatching rate; 61.41% of the progeny hatched. I believe this is because when you are a chronic alcoholic