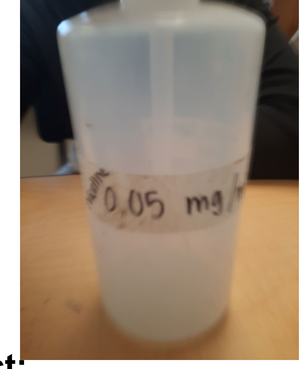

Nicotine: Slowing Minds Millions at a Time

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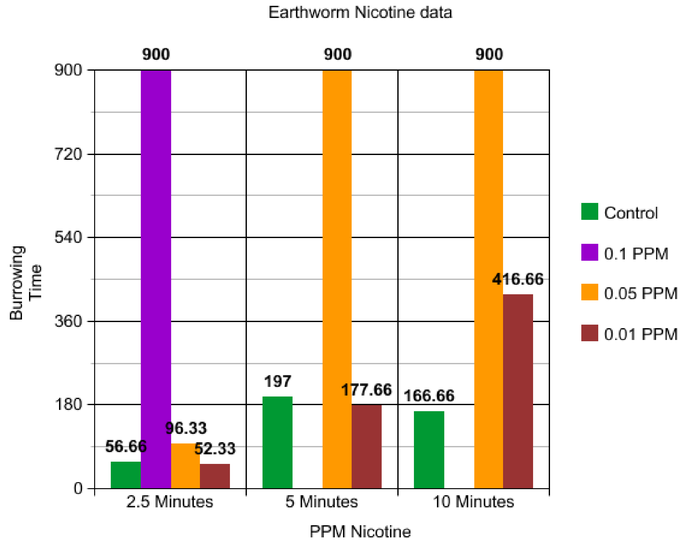
Abstract:

The contaminant Nicotine can have effects to make you happy, but there are many potential lethal effects. The scientists made an experiment measuring earthworm burrowing time to explore the effects of nicotine.The scientists had made exposure chambers and burrowing chambers to fuel the tests.The scientists had seen that as the nicotine PPM and exposure time went up the longer it took for worms to burrow.The earthworms were likely having lower thinking times and slower muscular reactions.The scientists were doing this experiment to see the affect that Nicotine could have on brain and muscular reactions. Because Nicotine is widely used by humans, these effects could have a large impact on human health globally.

Introduction:

Nicotine can make it to your brain in seconds and wear off in minutes. Nicotine has many effects like releasing dopamine to make people have happy thoughts. Nicotine is generally just used to try it initially, but then after a while it is irresistible due to it's addictive properties. Only 40% of people can quit cocaine but only 8 % of people can quit nicotine. Products with Nicotine in them may include chewing tobacco, Cigarettes, Cigars, hookah, snuff, and dip . When using Nicotine you can get symptoms like decressed appetite, Heightened mood Increased heart rate, Nausea, higher blood pressure, The scientists wanted to research how the effects of nicotine would affect the burrowing times of earthworms, exposed to varying levels of nicotine to demonstrate the effect on muscle and thinking in the worm. The scientists had hypothdeesized that the more Nicotine exposure time the worms had the more time it would take for worms to burrow.

solution	Exposure time	mean	t-score	Is it significant?
0.01	2.5	62.33	0.2390	No
0.01	5	177.67	0.2422	No
0.01	10	416.67	0.1386	No
0.05	2.5	231.33	1.5508	Yes
0.05	5	900	11.4973	Yes
0.05	10	900	1.9925	Yes
0.1	2.5	900	53.2543	Yes



Statistics: As the chart demonstrates, there is a greater outcome as the solution goes up, as the worms took longer time to burrow with higher PPM solutions. That shows that the worms are being increasingly affected as the concentration goes up, as demonstrated by longer burrowing time. You can conclude that if the t-score is above 1 that it is significant, and it shows that the data coming out is getting more significant as the solution PPM increased. This shows that the scientists hypothesis was correct in the fact that they thought that if the worms were exposed to higher PPM and exposure time the longer it would take for the earthworms to burrow.

Results:

Nicotine is a stimulant drug that changes your mood, awareness, and can affect other things like your heart rate. Nicotine is very bad for the body because it is highly addictive and it can lead to bad permanent consequences that end up ruining your life. A couple of symptoms are lung desease and personality traits being ruined. And, depression. Because about 14% of adults ages 18+ use nicotine, a group of scientists decided to do an experiment on how different dilutions of Nicotine would affect a redworm's burrowing time.The independent variable for the experiment was The Nicotine concentration and exposure time while the dependent was how long it took the earthworm to burrow into the Soil. The scientists decided that if the scientists expose redworms to Nicotine, then, it will have a negative affect on the earthworm's burrowing time because it will go to the worm's brains and make their brains work slower, making them confused.The scientists had limited time to do their experiment and with more time they could have possibly addedc lower Nicotine concentratens

Materials and Methods:

The way the scientists tested the worms was by first putting filter paper cut out like the size of the cup in the cup. Then the scientists pour 2mL of the selected dilution onto the filter paper. After this, the worms were placed in the cup and another piece of filter paper was placed over the worms along with another cup. The scientists would then start a timer for the exposure time. Once the timer went off, the scientists would take the worms out and quickly transfer them to a cup filled with moist dirt. After that, the scientists would start a stopwatch and wait until the worms burrowed fully, writing down the times of all of the worms. The scientists would then repeat this with all dilutions until the whole experiment is finished.

Sources;

https://www.cancer.org/healthy/stay-away-from-tobacco/why-people-start-using-tobacco.html
https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm
https://nida.nih.gov/publications/drugfacts/cigarettes-other-tobacco-products
https://www.eekwi.org/animals/other-invertebrates/earthworm-castles