Organ Bath Assignment

SCIBIOM301 Pharmacology

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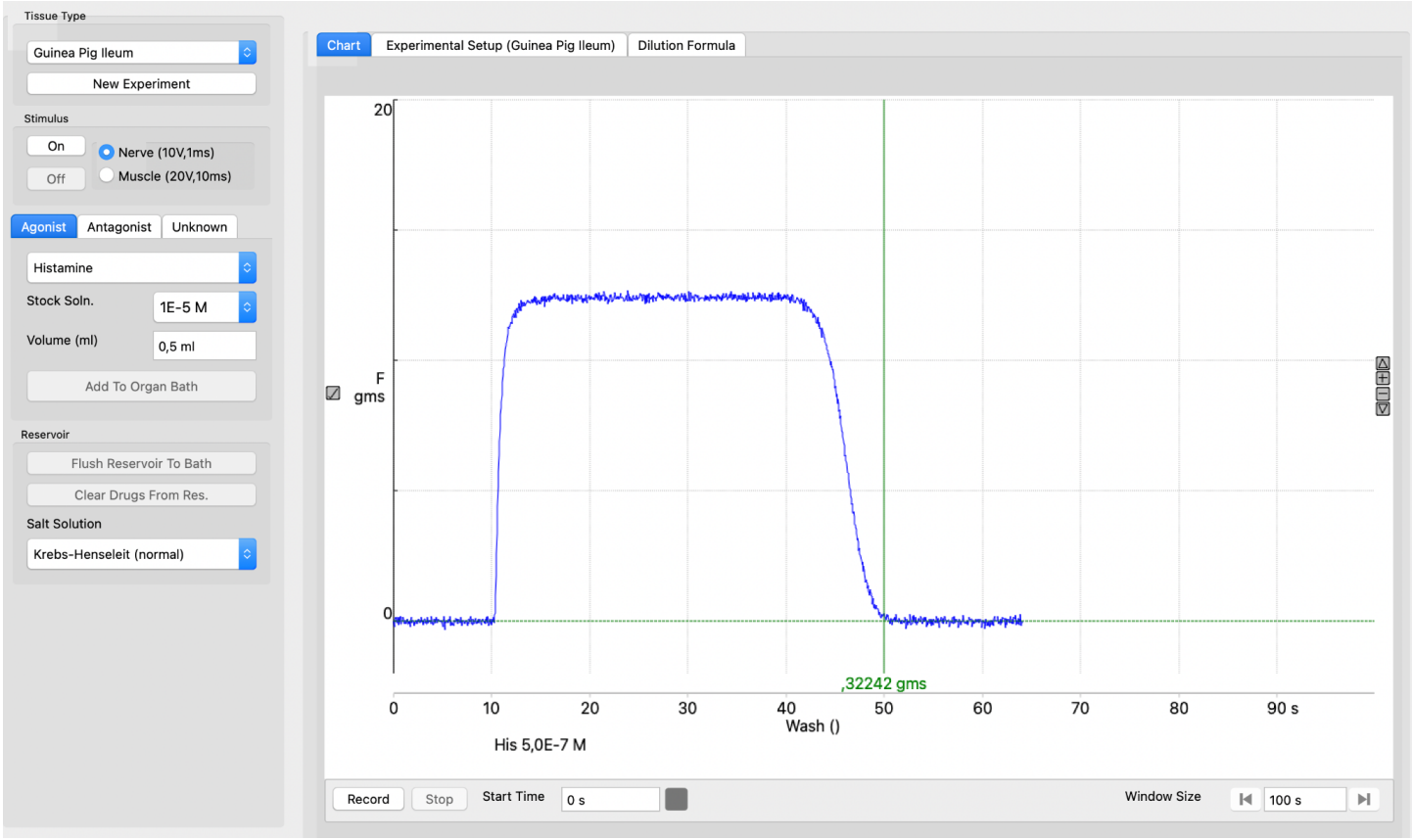
Organ Bath Histamine Agonist

First we had to calculate the volume of Histamine that we had to add to our organ bath using the following formula:

$Stock\ Solution\ Concentration \times Volume\ added = Final\ Bath\ Concentration \times Bath\ Volume$; which can be restructured as followed to obtain the volume we need to add:

$$Volume\ added = \frac{Final\ Bath\ Concentratin \times Bath\ Volume}{Stock\ Solution\ Concentration}$$

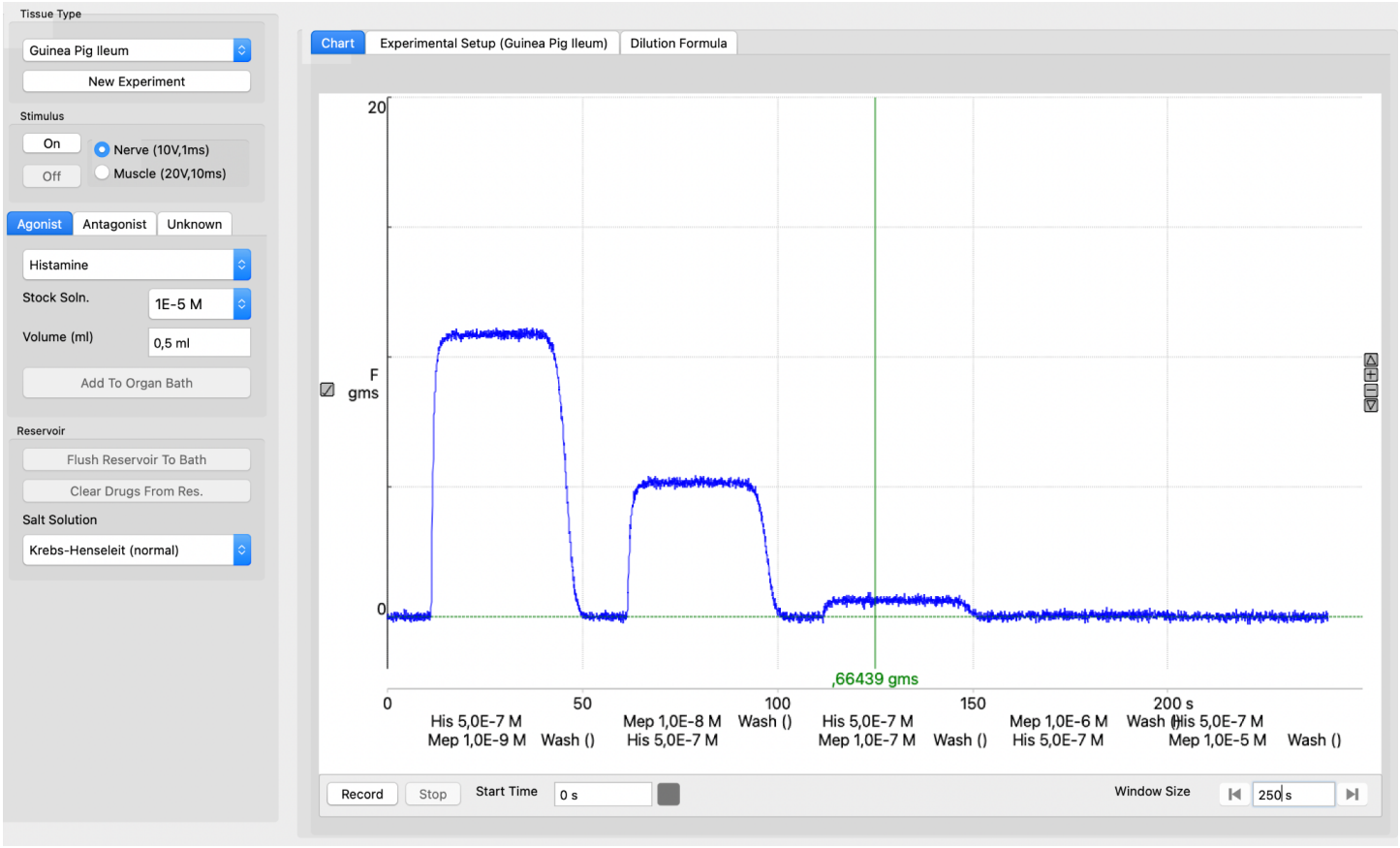


Graph 1. *Graph which shows Guinea Pig Ileum in a solution of 5 x 10^{-7} M of Histamine*

In the first 10 second of the graph nothing occurs, between 10-40 seconds the agonist Histamine was added and we can see the response that the programme gave us which was 13.2279 gms. At 40 seconds we flushed the reservoir to the bath and then we see a decrease in our response until it stabilizes at around 50 seconds.

Histamine (agonist) & Mepyramine (antagonist) in Guinea Pig Ileum

In this section we used the agonist Histamine at a concentration of 5 x 10^{-7} M and we obtained the graph that can be seen in *Graph 2*. The results can also be observed in a dose-response curve including the varying concentrations of Mepyramine between 1 x 10^{-5} to 1 x 10^{-9}, which was created with the help of the table with values obtained from *Graph 2*.



Graph 2. *Graph which shows Guinea Pig Ileum contraction in gms in solutions with 5 x 10^{-7} M of Histamine and different concentration of Mepyramine ranging from 1 x 10^{-5} to 1 x 10^{-9}.*

Histamine (agonist) Concentration	Mepyramine (antagonist) Concentration	GMS	Percentage (%) of Total GMS
5 x 10^{-7} M	none	13.2279	100 %
5 x 10^{-7} M	1 x 10^{-9}	11.109	83.9815844 %
5 x 10^{-7} M	1 x 10^{-8}	5.4421	41.141073 %
5 x 10^{-7} M	1 x 10^{-7}	0.72301	5.46579578 %
5 x 10^{-7} M	1 x 10^{-6}	0.039082	0.29545128 %
5 x 10^{-7} M	1 x 10^{-5}	0.019541	0.147771 %

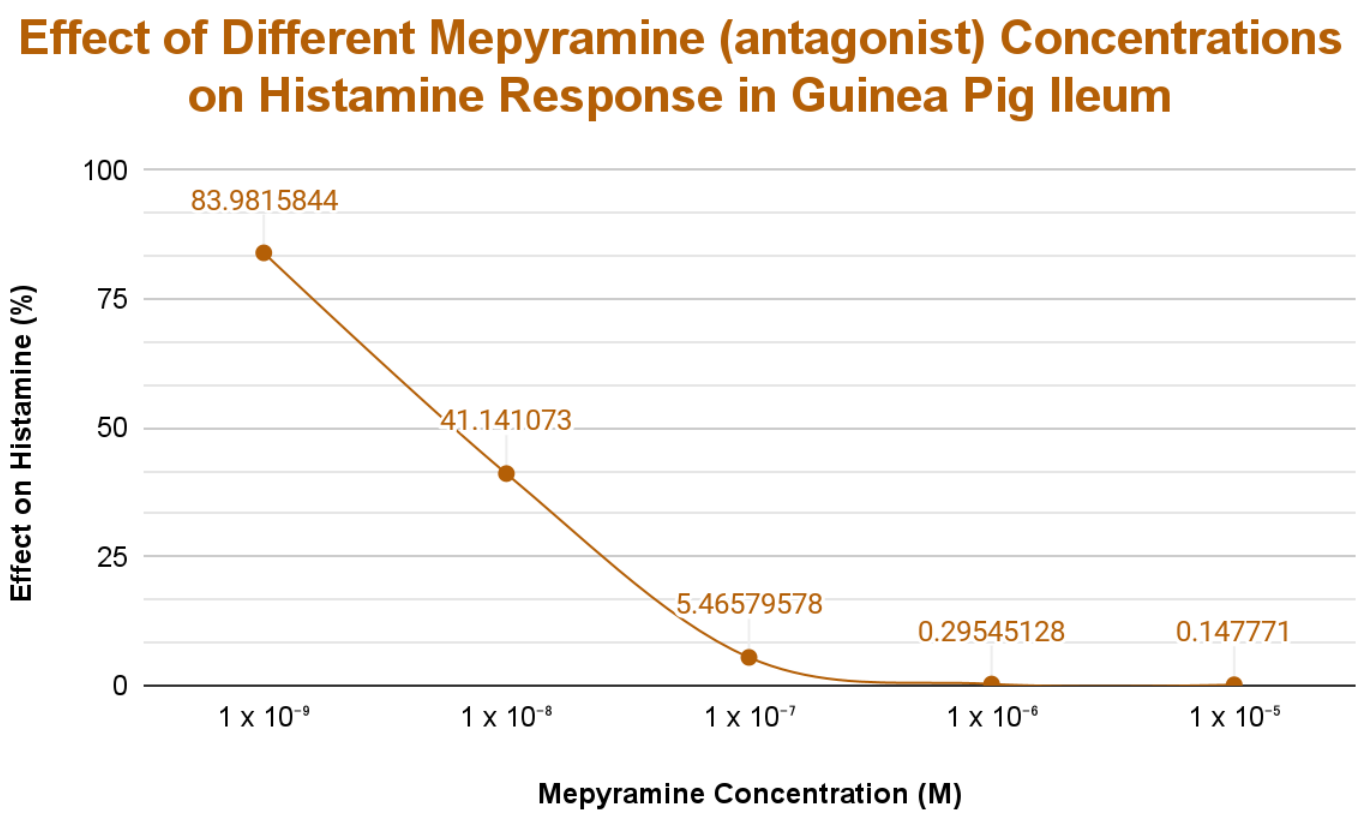
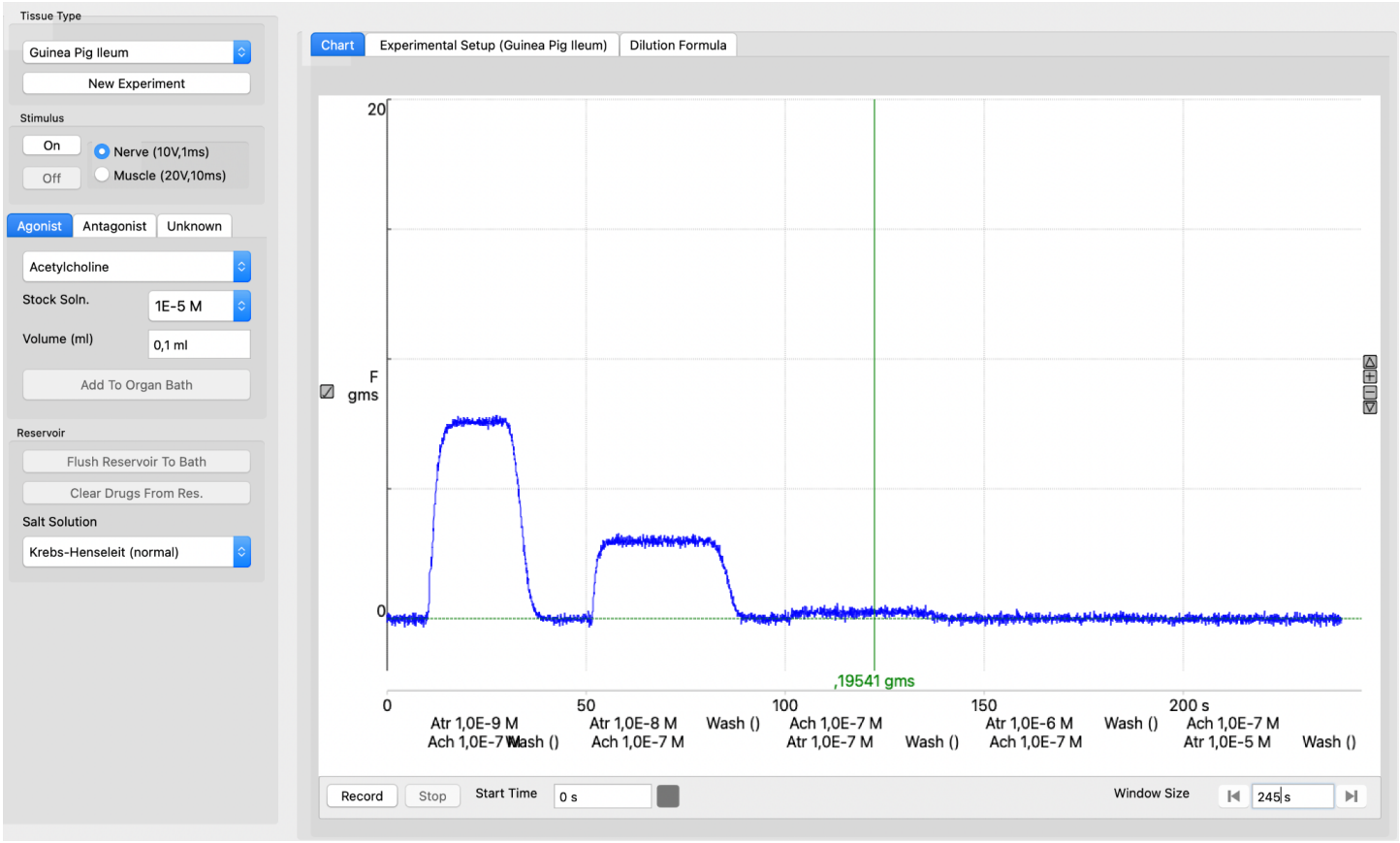


Figure 1. *Dose-Response Curve which shows effect of varying Mepyramine Concentrations between 1 x* 10^{-5} *to 1 x* 10^{-9} *on Histamine Response in Guinea Pig Ileum*

When looking at the dose-reponse curve, we can conclude that with increasing the concentration of the antagonist Mepyramine, the effect on histamine decreases.

Acetylcholine (agonist) & Atropine (antagonist) in Guinea Pig Ileum

In this section we used the agonist Acetylcholine at a concentration of 1 x 10^{-7} M and we obtained the graph that can be seen in *Graph 3*. The results can also be observed in a dose-response curve including the varying concentrations of Atropine between 1 x 10^{-5} to 1 x 10^{-9}, which was created with the help of the table with values obtained from *Graph 3*.



Graph 3. *Graph which shows Guinea Pig Ileum contraction in gms in solutions with 1 x 10^{-7} M of Acetylcholine and different concentrations of Atropine ranging from 1 x 10^{-5} to 1 x 10^{-9}.*

Acetylcholine (agonist) Concentration	Atropine (antagonist) Concentration	GMS	Percentage (%) of Total GMS
1 x 10^{-7} M	none	10.054	100 %
1 x 10^{-7} M	1 x 10^{-9}	8.0313	76.1982922 %
1 x 10^{-7} M	1 x 10^{-8}	3.0874	30.7081759 %
1 x 10^{-7} M	1 x 10^{-7}	0.40059	3.98438432 %
1 x 10^{-7} M	1 x 10^{-6}	0.039082	0.38872091 %
1 x 10^{-7} M	1 x 10^{-5}	-0.078163	-0.77743187 %

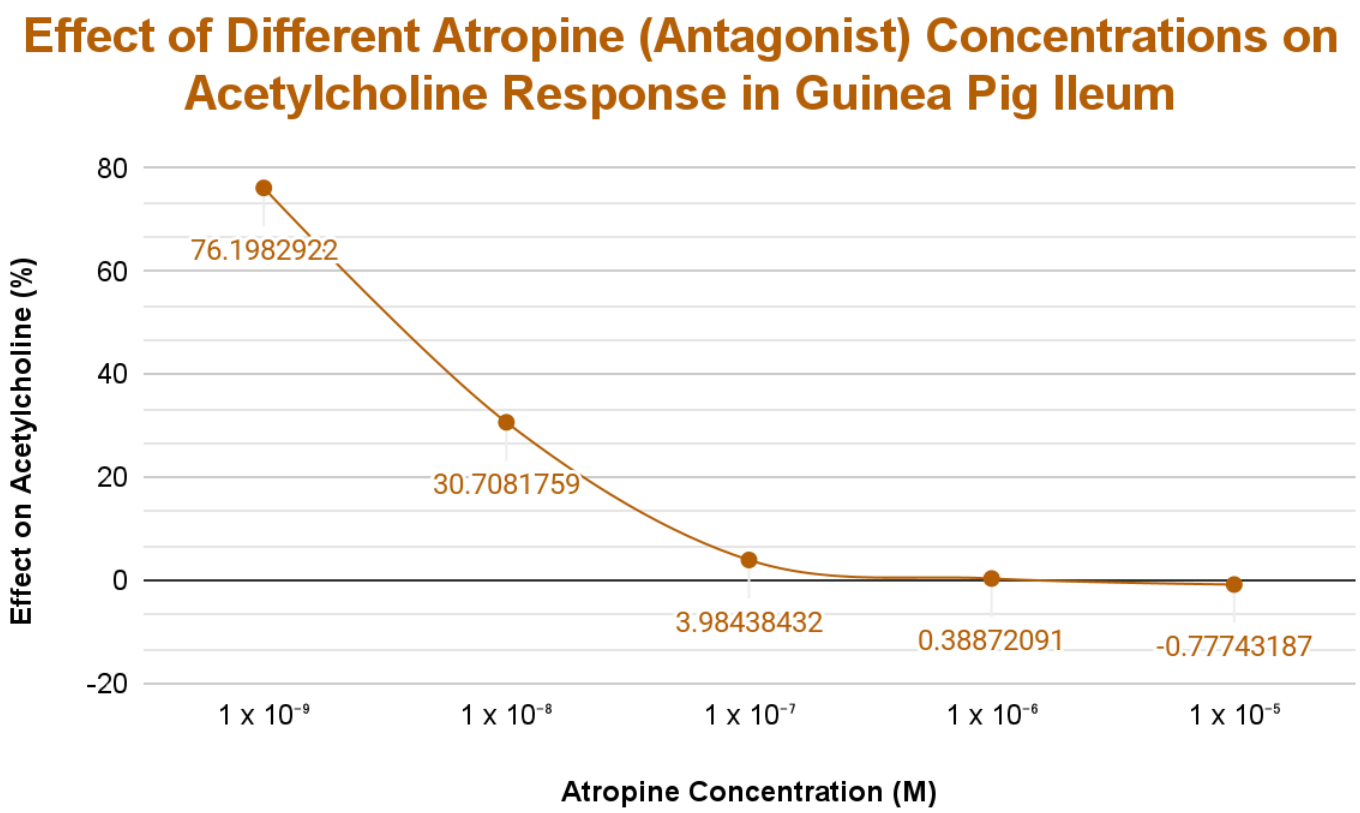


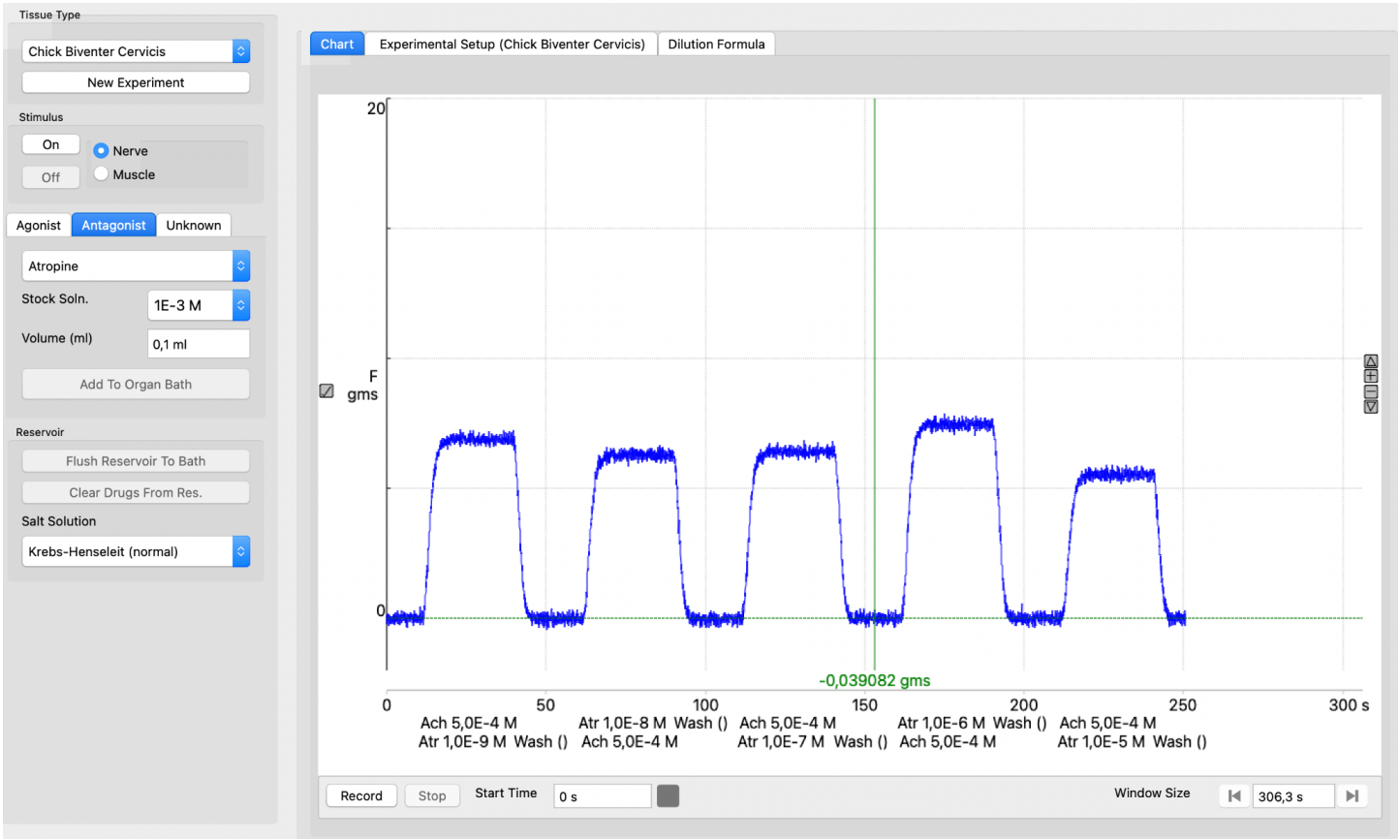
Figure 2. *Dose-Response Curve which shows effect of varying Atropine Concentrations between 1 x 10^{-5} to 1 x 10^{-9} on Acetylcholine Response in Guinea Pig Ileum*

When taking a look at the dose-reponse curve (*Figure 2*) we can state that when decreasing the concentrations of atropine, the effect on Acetylcholine increases.

Therefore, when comparing *Figure 1* and *Figure 2* to see the effects between Mepyramine on Histamine and Atropine on Acetylcholine, we can see similar curves just slightly different values and different maximum responses at several concentrations.

Acetylcholine (agonist) & Atropine (antagonist) in Chicken Biventer Cervicis

In this section we looked at the effect of atropine on Chicken Biventer Cervicis with a concentration of 5 x 10^{-4} M of acetylcholine and varying concentrations of atropine between 1 x 10^{-5} to 1 x 10^{-9}. Since lower concentrations did not show any effects that were visible with the programme, we used a higher concentration of the agonist Acetylcholine. We obtained the graph that can be seen in *Graph 4* and the results can also be observed in a dose-response curve including the varying concentrations of Atropine between 1 x 10^{-5} to 1 x 10^{-9}.



Graph 4. *Graph which shows Chicken Biventer Cervicis contraction in gms in solutions with 5 x 10^{-4} M of Acetylcholine and different concentrations of Atropine ranging from 1 x 10^{-5} to 1 x 10^{-9}.*

Acetylcholine (agonist) Concentration	Atropine (antagonist) Concentration	GMS	Percentage (%) of Total GMS
5 x 10^{-4} M	none	7.5825	100 %
5 x 10^{-4} M	1 x 10^{-9}	7.1519	94.3211342 %
5 x 10^{-4} M	1 x 10^{-8}	6.087	80.2769535 %
5 x 10^{-4} M	1 x 10^{-7}	6.5266	86.0745137 %
5 x 10^{-4} M	1 x 10^{-6}	7.1457	94.239367 %
5 x 10^{-4} M	1 x 10^{-5}	5.8915	77.6986482 %

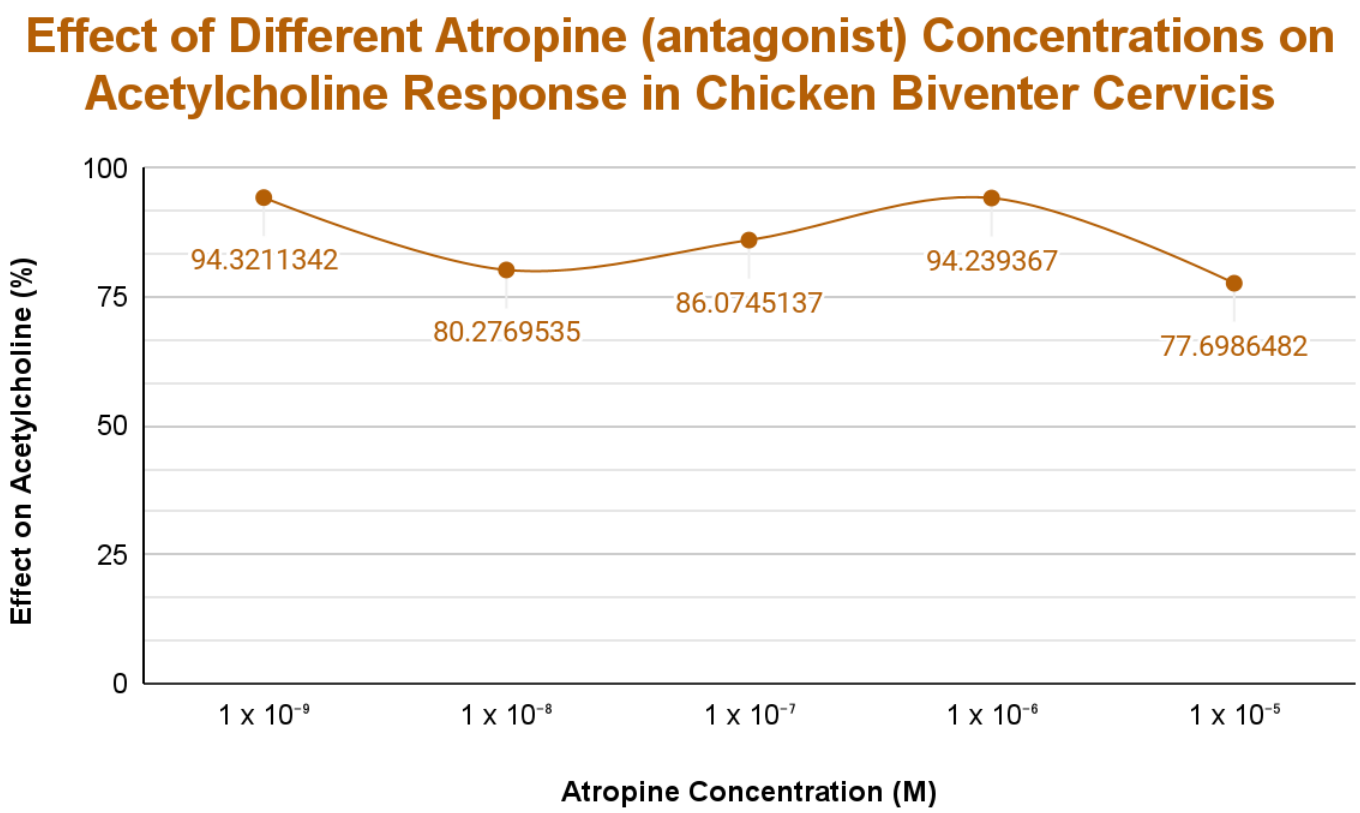


Figure 3. *Dose-Response Curve which shows effect of varying Atropine Concentrations between 1 x 10^{-5} to 1 x 10^{-9} on Acetylcholine Response in Chicken Biventer Cervicis*

When looking at this graph we can state that when we change the concentration of atropine it does not have an effect on the concentration of acetylcholine in Chicken Biventer Cervicis. Meaning that we could conclude the relationship between atropine acting as an antagonist for acetylcholine is not the same when looking at Chicken Biventer Cervicis as tissue and Guinea Pig Ileum, as they have different dose-response curves.