bacterialab

March 26, 2024

1 Bacterial Lab

1. Hypothesis
2. Predicted Results.
    1. The less time we apply antibiotics the higher the frequency of resistant bacteria will be present.

1.1 Experiment

1. Hypothesis
    1. Taking a probiotic during antibiotic treatment increases surviving bad bacteria.
2. Manipulation
    1. Independant Variable
        1. Amount of good bacteria added
        2. We will add more good bacteria in the second trial than the first.

3. Measurement
    1. Dependant Variable
        1. Frequency of bad bacteria being removed.
        2. Count the number of bad bacteria survived.
4. Predicted Results
    1. As the amount of good bacteria added to the dish increases the number of surviving bad bacteria increases.

[ ]:
```
# Table simulation of bacterial antibiotic resistance.

def calculate_percent(num_surviving, total_of_stage):
        return round((num_surviving / total_of_stage) * 100, 2)

beginning_numbers_no_good = {
        "good_bacteria": 0,
        "bad_bacteria": 50,
}

beginning_numbers_good = {
        "good_bacteria": 50,
        "bad_bacteria": 50,
}
```

```
surviving_bacteria_no_good = {
        "good_bacteria": 0,
        "bad_bacteria": 9,
}

percent_surviving_no_good = {
        "good_bacteria": 0,
        "bad_bacteria": 9/50 * 100,
}

surviving_bacteria_good = {
        "good_bacteria": 16,
        "bad_bacteria": 21,
}

percent_surviving_good = {
        "good_bacteria": 16/50 * 100,
        "bad_bacteria": 21/50 * 100,
}

print("Beginning with no good bacteria:")
print("Percent of bad bacteria surviving: ",␣
 ↪percent_surviving_no_good["bad_bacteria"], "%")
print("Percent of good bacteria surviving: ",␣
 ↪percent_surviving_no_good["good_bacteria"], "%")

print("Beginning with good bacteria:")
print("Percent of bad bacteria surviving: ",␣
 ↪percent_surviving_good["bad_bacteria"], "%")
print("Percent of good bacteria surviving: ",␣
 ↪percent_surviving_good["good_bacteria"], "%")
```

```
Beginning with no good bacteria:
Percent of bad bacteria surviving:  18.0 %
Percent of good bacteria surviving:  0 %
Beginning with good bacteria:
Percent of bad bacteria surviving:  42.0 %
Percent of good bacteria surviving:  32.0 %
```

[ ]:

LEGEND: a: hearts, b: bells, c: sealife, d: beads

Table 7.1 Results of short treatment simulation

15 sec Treatments	Beginning numbers of each type of bacteria				Number of surviving bacteria					Percent (%)of surviving bacteria				Numbers added during reproduction			
	a.	b.	c.	d.	a.	b.	c.	d.	Total	a.	b.	c.	d.	a.	b.	c.	d.
One	25	25	25	25	15	14	16	21	66	23	21	24	32	8	7	8	11
Two	23	21	24	32	11	7	14	17	49	22	14	29	35	11	7	15	18
Three	22	14	29	35	9	8	14	23	54	17	15	25	43	8	7	11	20
Four	17	15	25	43	13	8	15	20	56	23	14	27	36				

Table 7.2 Results of full treatment simulation

60 sec Treatment	Beginning numbers of each type of bacteria				Number of surviving bacteria					Percent (%)of surviving bacteria			
	a.	b.	c.	d.	a.	b.	c.	d.	Total	a.	b.	c.	d.
One	25	25	25	25	0	0	0	0	0	0	0	0	0