STATISTICAL ANALYSIS ON COMPARISM OF EFFECTS OF THREE ALCOHOLIC DRINKS ON HEARTBEAT AND BODY TEMPERATURE

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Abstract
This paper examines differences in the effects of three alcoholic drinks on heartbeat and body temperature. Independent two sample t-test was used to compare effects of two different alcoholic drinks on the heart beat rate and body temperature of three mouse. With this comparism, significant differences and non-significant differences were determined. The result shows that the effect of one alcoholic drink to another alcoholic drink on the heartbeat rate of all the mouse A, B,C are not significant, means effects are the same except that of trophy and regal for mouse B whose comparism of their effect shows significant means effects are different. Also, the effect of one alcoholic drink to another alcoholic drink on the body temperature of all the mouse A,B,C are not significant which means effects are the same. It is concluded that effect of any two alcoholic drinks on heart beat rate and body temperature of mouse are not significant.

Keyword: Alcoholic, Effects, Mouse, Heartbeat, Temperature

Introduction

Alcohol is any beverage containing ethanol, especially when that substance is thought of as the intoxicating component in fermented and distilled liquors, Tracy (2005). Alcohol comes in a variety of forms, sometimes referred to as "rubbing alcohol," isopropanol or isopropyl. Alcohol is employed in contemporary processes as well as in skin creams and household cleaning products

Industrial solvents like methanol, often known as methyl alcohol or wood alcohol, are frequently found in the form of methylated spirit. It can be found in anti-freeze solutions, photocopier developer, paint removers, and cleaning solvents. As a result, it is frequently accessible in affordable huge amounts. It is comparable to ethanol, but when the body digests it, the end result is poisonous. The cause of "alcohol poisoning" is this. And even minute levels of methanol, which are common in Kenya, have been known to cause blindness.. (Room, *et al.,* 2002)

Ethyl alcohol, usually referred to as ethanol, is a different form of alcohol that people consume for its intoxicating and mind-altering properties. Unless otherwise stated, the term "alcohol" refers to ethanol or ethyl alcohol. It is a thin, clear liquid with harsh burning taste and high flux. It is usually consumed in diluted concentrations of absolute {i.e. 100 per cent} ethyl alcohol. In several industrial applications, ethanol is employed as a reagent. Denatured ethanol is created for this purpose, combining ethyl alcohol with trace amounts of methanol to avoid theft for human consumption, Arnold (2005).

Amberley (2021) talked about the more severe effects of alcohol consumption. Yet, alcohol temporarily interferes with our regular biological functioning even when it is ingested in moderation. Our body temperature is one such physiological change that takes place Even though we can all recognize the signs, what is really happening and when may it become dangerous? Alcohol has an effect on your body's ability to regulate its temperature, called thermoregulation. The alcohol alters the methods your body employs to either warm you up or cool you down, which results in atypical thermoregulation activity.

According to Aayushi Gupta (2022), consuming alcohol in a continuous stream may cognitively calm you down, but it may actually make you feel hotter physically because it alters and unbalances your body in many ways. He asserts that a variety of factors, including the quantity of alcohol consumed, can contribute to this issue. No points for figuring out that the main offenders here are elevated body temperature and elevated heart rate. A few drinks could speed up your heartbeat. Thus, drinking makes your heart beat faster. In this paper, independent two sample t test was used to compare effects of three alcoholic drinks which are trophy, regal and origin

on the body temperature and heartbeat of three different mouse. One of the three alcoholic drinks was administered to three mouse for a number of period of times in a day and observations on the heartbeats and temperatures measurements were taken down, the two alcoholic drinks were administered in two remaining days.

MATERIAL AND METHOD

Independent two sample T test is a statistical test that is used to compare the means of two groups when sample is small.

Hypothesis Statement

H_0: $\mu_1 = \mu_2$

H_1: $\mu_1 \neq \mu_2$

Level of significance α = 0.05

$$T = \sqrt{S^2 p\left\{\frac{1}{n1} + \frac{1}{n2}\right\}} \sim t \propto_2 v$$

Where $\bar{x}_1$ and $\bar{x}_2$ are the means of two samples and σ_1 and σ_2 are the samples standard deviations and n_1 and n_2 are the samples number

Reject H_0 if p value is less than α value

Data Presentation

Table 1: Day1 Heartbeat rates with 5mols of Trophy administered

	Before given	30minutes After	1 hour After	2 hours After	3 hours After
MOUSE A	62BPM	47BPM	41BPM	62BPM	48BPM
MOUSE B	60BPM	52BPM	50BPM	56BPM	55BPM
MOUSE C	58BPM	48BPM	51BPM	55BPM	64BPM

Table 2: Day1 Temperatures with 5mols of Trophy administered

	Before given	30 minutes after	1 hour	2 hour	3 hour
MOUSE A	37.2^{0C}	35.8^{0C}	36.8^{0C}	37.4^{0C}	37.8^{OC}
MOUSE B	37.4^{0C}	$37.\ 1^{0C}$	$38.\ 1^{0C}$	$38.\ 0^{0C}$	$38.\ 0^{0C}$
MOUSE C	$37.\ 2^{0C}$	$35.\ 9^{0C}$	$37.\ 3^{0C}$	$38.\ 5^{0C}$	$38.\ 1^{0C}$

Table3: Day2 Heartbeat rates with 5mols of Regal dry gins administered

	Before	30 minutes after	1 hour	2 hour	3 hour
MOUSE A	56BPM	52BPM	56BPM	60BPM	62BPM
MOUSE B	60BPM	54BPM	56BPM	55BPM	56BPM
MOUSE C	60BPM	59BPM	48BPM	54BPM	58BPM

Table 4: Day2 Temperatures with 5mols of Regal dry gins administered

	Before	30minutes after	1 hour	2 hour	3 hour
MOUSE A	$36.\ 7^{0C}$	$36.\ 1^{0C}$	$37.\ 4^{0C}$	$37.\ 2^{0C}$	$37.\ 8^{0C}$
MOUSE B	$36.\ 9^{0C}$	$38.\ 0^{0C}$	$38.\ 1^{0C}$	$38.\ 1^{0C}$	$38.\ 3^{0C}$
MOUSE C	$37.\ 8^{0C}$	$37.\ 0^{0C}$	$36.\ 2^{0C}$	$36.\ 8^{0C}$	$37.\ 0^{0C}$

Table 5: Day 3 Heartbeat rates with 5mols of Origin Administered

	Before	30 minutes after	1 hour after	2 hours after	3 hours after
MOUSEA	62BPM	54BPM	61BPM	62BPM	60BPM
MOUSE B	60BPM	56BPM	58BPM	55BPM	57BPM
MOUSE C	64BPM	68BPM	54BPM	62BPM	61BPM

Table6: Day 3 Temperatures with 5mols of Origin Administered

	Before	30 minutes after	1 hour after	2 hours after	3 hours after
MOUSE A	36.7^{0C}	35.5^{0C}	36.3^{0C}	37.6^{0C}	37.4^{0C}
MOUSE B	38.0^{0C}	38.1^{0C}	38.2^{0C}	38.1^{0C}	37.2^{0C}
MOUSE C	37.0^{0C}	37.9^{0C}	38.4^{0C}	38.0^{0C}	37.8^{0C}

DATA ANALYSIS

$\boldsymbol{H_0}$: There is no significant difference on the effect of any selected two alcoholic drinks (Trophy and Regal, Trophy and Origin, Regal and Origin) on mouse A/B/C Heartbeat

$\boldsymbol{H_1}$: There is a significant difference on the effect of any selected two alcoholic drinks (Trophy and Regal, Trophy and Origin, Regal and Origin) on mouse A/B/C Heartbeat

Table.7: Analysis showing effects of alcoholic drink on Mouse heartbeat

	Heartbeat Rate			
Alcoholic drink	t-test	df	p value	
Trophy and Regal(Mouse A)	-1.131	8	0.3066	Not Significant
Trophy and Regal(Mouse B)	-17.858	8	0.0001	Significant
Trophy and Regal(Mouse C)	-0.16917	8	0.8701	Not Significant
Trophy and Origin(Mouse A)	-2.420	8	0.46	Not Significant
Trophy and Origin (Mouse B)	-1.352	8	0.213	Not Significant
Trophy and Origin (Mouse C)	-1.832	8	0.104	Not Significant
Regal and Origin(Mouse A)	-1.132	8	0.291	Not Significant
Regal and Origin (Mouse B)	-.750	8	0.475	Not Significant
Regal and Origin (Mouse C)	-1.890	8	0.095	Not Significant

H_0: There is no significant difference on the effect of any selected two alcoholic drinks(Trophy and Regal, Trophy and Origin, Regal and Origin) on mouse A/B/C Temperature

H_1: There is a significant difference on the effect of any selected two alcoholic drinks(Trophy and Regal, Trophy and Origin, Regal and Origin) on mouse A/B/C Temperature

Table8: Analysis showing effects of alcoholic drink on Mouse on body temperature

	Body Temperature			
Alcoholic drink	t-test	df	p value	
Trophy and Regal(Mouse A)	0.0889	8	0.9314	Not Significant
Trophy and Regal(Mouse B)	-0.5015	8	0.6302	Not Significant
Trophy and Regal(Mouse C)	0.8538	8	0.4242	Not Significant
Trophy and Origin(Mouse A)	0.587	8	0.573	Not Significant
Trophy and Origin (Mouse B)	-0..741	8	0.480	Not Significant
Trophy and Origin (Mouse C)	-0..836	8	0.427	Not Significant
Regal and Origin(Mouse A)	.0.706	8	0.500	Not Significant
Regal and Origin (Mouse B)	-.0. 129	8	0.900	Not Significant
Regal and Origin (Mouse C)	-2.504	8	0.37	Not Significant

Discussion and Results

It is discovered from above table results with the use of p value, that the effects of the two alcoholic drinks [Trophy and Regal (Mouse A and C), Trophy and Origin (Mouse A, B, C), Regal and Origin(Mouse A,B,C)] on the heartbeat rate of three mouse are not significant (the same) for all the three alcoholic drinks compared except between trophy and regal for mouse B which is significant. Also, the effects two alcoholic drinks [Trophy and Regal (Mouse A, B, C), Trophy and Origin (Mouse A,B, C), Regal and Origin(Mouse A,B,C)] on the body temperature of three mouse are all not significant (the same).

Conclusion

Based on the above result, it is concluded that the effect of any two of the alcoholic drinks on the body temperature and heartbeat rate been compared will always not be significant. .Hence when any of them is taken in moderation it will not have a significant effect on the body system

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