02a - Longitudinal Analysis of Cannabis-related Temperatures (Free Feed Administration)

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Free Feed Administration Model - July

Chronic effects of cannabis

For this analysis, I compared the temperature at during the 'predose' window across dosage groups using time in days as a continuous covariate. Data from dosing days and non-dosing days were included since we are only looking at the predose window.

Two-Way ANOVA Results

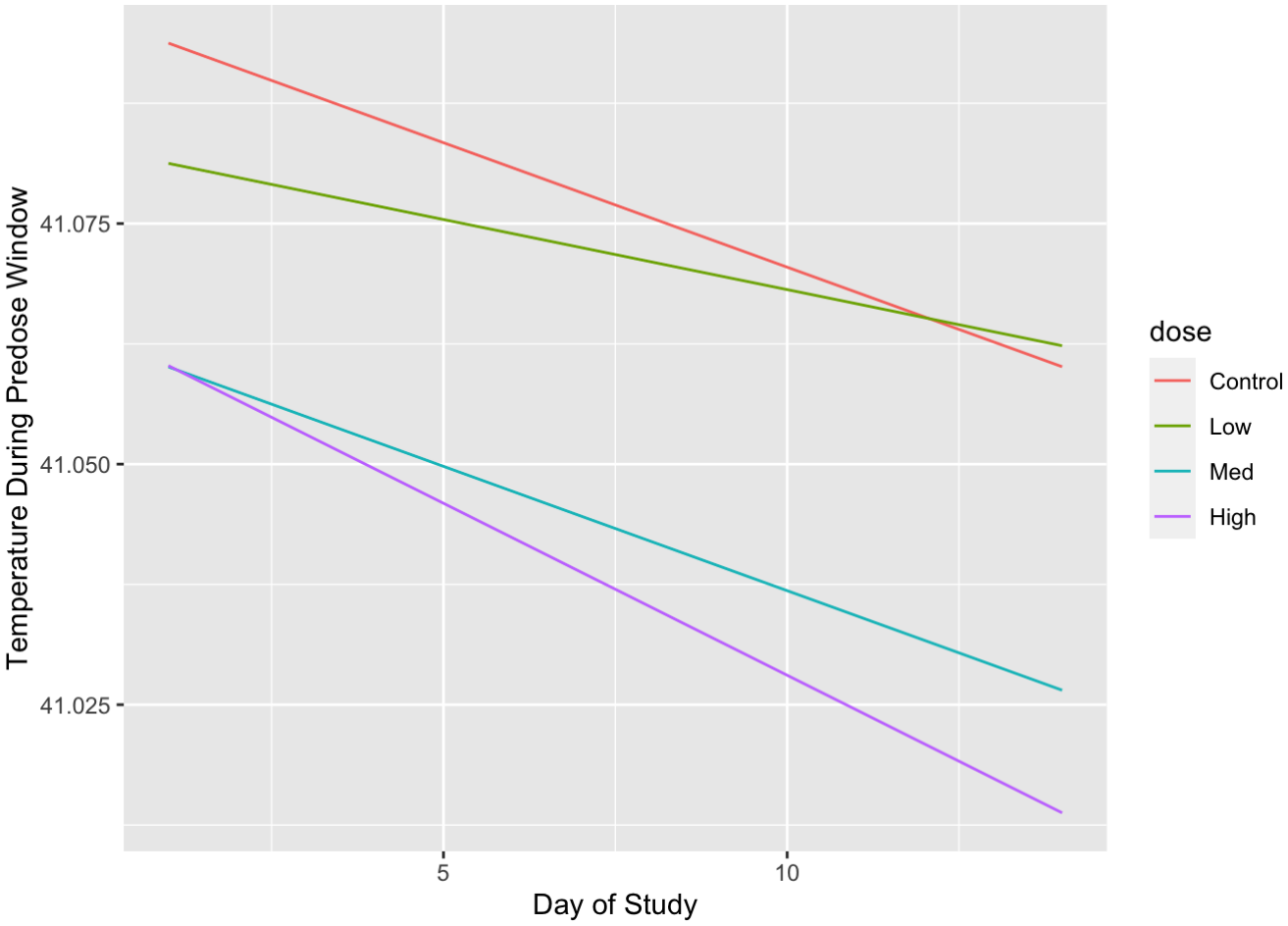
	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
dose	0.0005694	0.0001898	3	5.936803	1.513587	0.3049112
study_day	0.0129261	0.0129261	1	113.000000	103.088611	0.0000000
dose:study_day	0.0012334	0.0004111	3	113.000000	3.278764	0.0236225

Comparing Slopes, i.e., study day trends, across dosage groups

dose	study_day.trend	SE	df	lower.CL	upper.CL
Control	-0.0025871	0.0005250	113	-0.0036272	-0.0015471
Low	-0.0014584	0.0005250	113	-0.0024984	-0.0004184
Med	-0.0025856	0.0005250	113	-0.0036256	-0.0015455
High	-0.0035751	0.0004286	113	-0.0044243	-0.0027259

contrast	estimate	SE	df	t.ratio	p.value
Control - Low	-0.0011287	0.0007424	113	-1.5203813	0.4287852
Control - Med	-0.0000016	0.0007424	113	-0.0021147	1.0000000
Control - High	0.0009880	0.0006777	113	1.4577900	0.4663906
Low - Med	0.0011272	0.0007424	113	1.5182666	0.4300368

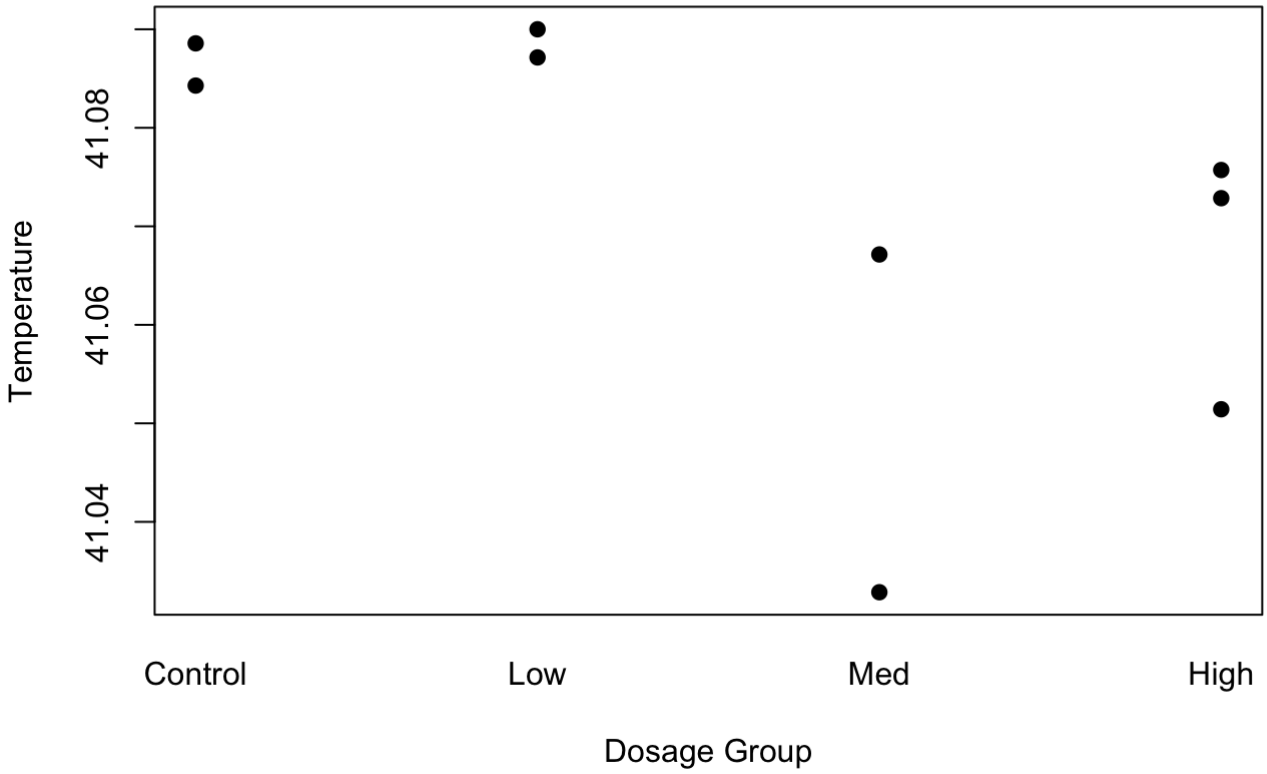
contrast	estimate	SE	df	t.ratio	p.value
Low - High	0.0021167	0.0006777	113	3.1232843	0.0120119
Med - High	0.0009895	0.0006777	113	1.4601065	0.4649797



Based on my understanding of the study design, the 4 dosage groups should not differ in temperature at day 1 during the predose window because none of the animals would have received any cannabis prior to that time point.

Since this graphic made it look like the dosage groups differed at day 1, I tested that directly.

Omnibus p-value for dosage effect: 0.104



Although there isn't a significant difference in temperature on study day 1 at the predose time window. There is an obvious trend.

Acute Effects of Cannabis on Temperature

To examine the acute effects (i.e., within a treatment day) of cannabis, data points were limited to those collected during a 'dose' day.

Initial Acute Effect of Cannabis on Temperature

First, the initial acute effects of cannabis were assessed by only focusing on changes in temperature across different windows of time on the first study day that mice were exposed to cannabis

Two-Way ANOVA Results

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
dose	0.0013089	0.0004363	3	5	3.6840041	0.0971849
time_window	0.0007749	0.0001107	7	107	0.9347246	0.4830066
dose:time_window	0.0028668	0.0001365	21	107	1.1527158	0.3080675

There were no differences in temperature across the different time windows within the first day of treatment.

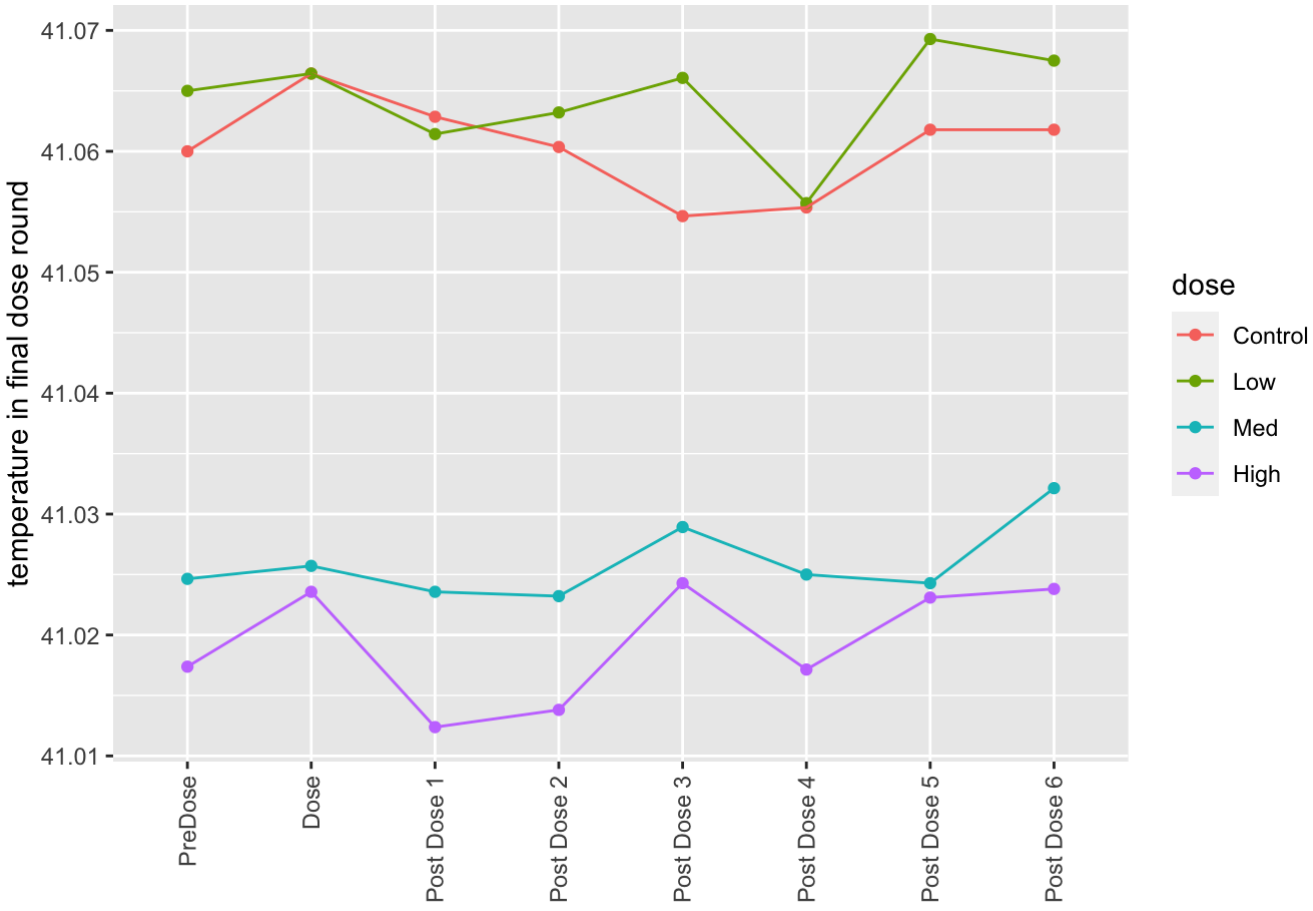
Acute Effect of Cannabis on Temperature After Chronic Exposure to Cannabis

Two-Way ANOVA Results

	Sum Sq	Mean Sq	NumDF	DenDF	F value	Pr(>F)
dose	0.0003662	0.0001221	3	5	2.3029658	0.1943129
time_window	0.0010263	0.0001466	7	107	2.7665151	0.0110711
dose:time_window	0.0010040	0.0000478	21	107	0.9020756	0.5887608

The two-way ANOVA results suggest that there is a time window effect but that effect does not differ between dosage groups (i.e., the interaction effect is not significant). Therefore the time window estimates were calculated both within each dosage group and between dosage groups.

Time Window Effect in Last Round of Dose Stratified by Dose



None of the pairwise contrasts between PreDose and each of the other time windows were significant (unadjusted p-value < 0.05) for any of the different dosage groups.

Marginal Means Estimates for Time Window Effect in Last Round of Dose

None of the pairwise contrasts between PreDose and each of the other time windows were significant (unadjusted p-value < 0.05).