

Analysis of variance. One-way ANOVA.

Investigated experimental factor: Cd Concentration
 Factors name: Control; 0.5 mg/L; 1.0 mg/L; 1.5 mg/L;
 Investigated experimental response: Total protein

* - The components of observed variance:

	df	type I SS	mean square	F value	p>F
treatments	3	1180225.8	393408.607	40.8998	<0.001
Residuals	24	230852.3	9618.844	-	-

* - Distribution of variables in variance classes:

	treatment	mean	sd	sem	tukey	snk	duncan	NA.	scott_knott
1	Control	773.8639	87.9719	37.0691	a	a	a	a	a
2	0.5 mg/L	551.2071	151.6710	37.0691	b	b	b	b	b
3	1.0 mg/L	296.0420	53.0339	37.0691	c	c	c	c	c
4	1.5 mg/L	271.3711	70.1400	37.0691	c	c	c	c	c

* - The raw multiple comparisons test:

	pair contrast	p(tukey)	p(snk)	p(duncan)	NA
1	Control - 0.5 mg/L	222.6568	0.0015	0.0003	0.0003 0.0006
2	Control - 1.0 mg/L	477.8219	0.0000	0.0000	0.0000 0.0000
3	Control - 1.5 mg/L	502.4928	0.0000	0.0000	0.0000 0.0000
4	0.5 mg/L - 1.0 mg/L	255.1651	0.0003	0.0001	0.0001 0.0003
5	0.5 mg/L - 1.5 mg/L	279.8360	0.0001	0.0001	0.0000 0.0000
6	1.0 mg/L - 1.5 mg/L	24.6709	0.9648	0.6422	0.6422 0.6422

* - Normality (Shapiro-Wilk) and homogeneity (Bartlett) tests applied to residuals:

	values
p.value Shapiro-Wilk test	0.5264
p.value Bartlett test	0.0723
coefficient of variation (%)	20.7300
first value most discrepant	12.0000
second value most discrepant	10.0000
third value most discrepant	11.0000

* - The estimated marginal means (EMMs) of factors values:

Concentration	emmean	SE	df	lower.CL	upper.CL
Control	774	37.1	24	697	850
0.5 mg/L	551	37.1	24	475	628
1.0 mg/L	296	37.1	24	220	373
1.5 mg/L	271	37.1	24	195	348

Confidence level used: 0.95

* - The contrasts between factors in terms of estimated marginal mMeans (EMMs):

contrast	estimate	SE	df	t.ratio	p.value
Control - (0.5 mg/L)	222.7	52.4	24	4.247	0.0003
Control - (1.0 mg/L)	477.8	52.4	24	9.115	<.0001
Control - (1.5 mg/L)	502.5	52.4	24	9.585	<.0001
(0.5 mg/L) - (1.0 mg/L)	255.2	52.4	24	4.867	0.0001
(0.5 mg/L) - (1.5 mg/L)	279.8	52.4	24	5.338	<.0001
(1.0 mg/L) - (1.5 mg/L)	24.7	52.4	24	0.471	0.6422

P value adjustment: fdr method for 6 tests

* - Calculated p values of pair factor contrasts:

	contrasts.vals	p.vals
Control - (0.5 mg/L)	222.65671	3.379364e-04
Control - (1.0 mg/L)	477.82186	8.730665e-09
Control - (1.5 mg/L)	502.49271	6.701618e-09
(0.5 mg/L) - (1.0 mg/L)	255.16514	8.729353e-05
(0.5 mg/L) - (1.5 mg/L)	279.83600	3.540777e-05
(1.0 mg/L) - (1.5 mg/L)	24.67086	6.421716e-01

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*   - Benjamini-Krieger-Yekutieli multiple-stages comparison procedure
*   and the decision to reject the null hypothesis of equal means.
      contrasts.vals      p.vals      BYK.pvals BYK.rejection
Control - (0.5 mg/L)      222.65671 3.379364e-04 1.352202e-04      TRUE
Control - (1.0 mg/L)      477.82186 8.730665e-09 4.020971e-08      TRUE
Control - (1.5 mg/L)      502.49271 6.701618e-09 4.020971e-08      TRUE
(0.5 mg/L) - (1.0 mg/L)   255.16514 8.729353e-05 6.547587e-05      TRUE
(0.5 mg/L) - (1.5 mg/L)   279.83600 3.540777e-05 4.721203e-05      TRUE
(1.0 mg/L) - (1.5 mg/L)    24.67086 6.421716e-01 2.991059e-01      FALSE

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