

Analysis of variance. One-way ANOVA.

Investigated experimental factor: The type of cation

Factors name: Ni; Cd; Pb;

Investigated experimental response: pH of culture medium

\* - The components of observed variance:

	df	type I SS	mean square	F value	p>F
treatments	2	0.0036	0.0018	1.9947	0.165
Residuals	18	0.0163	0.0009	-	-

\* - Distribution of variables in variance classes:

	treatment	mean	sd	sem	tukey	snk	duncan	NA.	scott_knott
1	Pb	9.2814	0.0318	0.0114	a	a	a	a	a
2	Ni	9.2600	0.0283	0.0114	a	a	a	a	a
3	Cd	9.2500	0.0300	0.0114	a	a	a	a	a

\* - The raw multiple comparisons test:

	pair contrast	p(tukey)	p(snk)	p(duncan)	NA
1	Pb - Ni	0.0214	0.3988	0.2010	0.4020
2	Pb - Cd	0.0314	0.1543	0.0804	0.2016
3	Ni - Cd	0.0100	0.8110	0.5429	0.5429

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

	values
p.value Shapiro-Wilk test	0.3247
p.value Bartlett test	0.9615
coefficient of variation (%)	0.3200
first value most discrepant	12.0000
second value most discrepant	7.0000
third value most discrepant	17.0000

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

	Concentration	emmean	SE	df	lower.CL	upper.CL
Ni		9.260	0.01137	18	9.236	9.284
Cd		9.250	0.01137	18	9.226	9.274
Pb		9.281	0.01137	18	9.258	9.305

Confidence level used: 0.95

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

	contrast	estimate	SE	df	t.ratio	p.value
Ni - Cd		0.0100	0.0161	18	0.622	0.5418
Ni - Pb		-0.0214	0.0161	18	-1.333	0.2988
Cd - Pb		-0.0314	0.0161	18	-1.955	0.1990

P value adjustment: fdr method for 3 tests

\* - Calculated p values of pair factor contrasts:

	contrasts.vals	p.vals
Ni - Cd	0.01000000	0.5417627
Ni - Pb	-0.02142857	0.2988425
Cd - Pb	-0.03142857	0.1989730

\* - 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
Ni - Cd	0.01000000	0.5417627	0.7451921	FALSE
Ni - Pb	-0.02142857	0.2988425	0.7451921	FALSE
Cd - Pb	-0.03142857	0.1989730	0.7451921	FALSE