Analysis of variance. One-way ANOVA.

Investigated experimental factor: Pb 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 1354108.7  451369.553  58.639 <0.001
Residuals  24  184738.3    7697.428      -      -
```

* - Distribution of variables in variance classes:
```
  treatment      mean        sd      sem tukey snk duncan NA. scott_knott
1  Control 773.8639  87.9719 33.1607     a   a      a   a             a
2  0.5 mg/L 476.7273 107.9100 33.1607    b   b      b   b             b
3  1.0 mg/L 255.8789  50.7239 33.1607    c   c      c   c             c
4  1.5 mg/L 223.3021  93.9850 33.1607    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 297.1366   0.0000 0.0000    0.0000 0.0000
2  Control - 1.0 mg/L 517.9850   0.0000 0.0000    0.0000 0.0000
3  Control - 1.5 mg/L 550.5618   0.0000 0.0000    0.0000 0.0000
4 0.5 mg/L - 1.0 mg/L 220.8484   0.0005 0.0001    0.0001 0.0002
5 0.5 mg/L - 1.5 mg/L 253.4252   0.0001 0.0000    0.0000 0.0000
6 1.0 mg/L - 1.5 mg/L  32.5768   0.8981 0.4939    0.4939 0.4939
```

* - Normality (Shapiro-Wilk) and homogeneity (Bartlett) tests applied to residuals:
```
                            values
p.value Shapiro-Wilk test   0.0457
p.value Bartlett test       0.3881
coefficient of variation (%) 20.2900
first value most discrepant  11.0000
second value most discrepant 27.0000
third value most discrepant   3.0000
```

* - The estimated marginal means (EMMs) of factors values:
```
 Concentration emmean   SE df lower.CL upper.CL
 Control          774 33.2 24      705      842
 0.5 mg/L         477 33.2 24      408      545
 1.0 mg/L         256 33.2 24      187      324
 1.5 mg/L         223 33.2 24      155      292
```

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)      297.1 46.9 24   6.336  <.0001
 Control - (1.0 mg/L)      518.0 46.9 24  11.045  <.0001
 Control - (1.5 mg/L)      550.6 46.9 24  11.740  <.0001
 (0.5 mg/L) - (1.0 mg/L)   220.8 46.9 24   4.709  0.0001
 (0.5 mg/L) - (1.5 mg/L)   253.4 46.9 24   5.404  <.0001
 (1.0 mg/L) - (1.5 mg/L)    32.6 46.9 24   0.695  0.4939
```

P value adjustment: fdr method for 6 tests

* - Calculated p values of pair factor contrasts:
```
                    contrasts.vals       p.vals
Control - (0.5 mg/L)       297.13657 3.000257e-06
Control - (1.0 mg/L)       517.98500 2.044233e-10
Control - (1.5 mg/L)       550.56171 1.178632e-10
(0.5 mg/L) - (1.0 mg/L)    220.84843 1.043589e-04
(0.5 mg/L) - (1.5 mg/L)    253.42514 2.249828e-05
(1.0 mg/L) - (1.5 mg/L)     32.57671 4.939428e-01
```

```
*    - 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)          297.13657 3.000257e-06 4.000355e-06          TRUE
Control - (1.0 mg/L)          517.98500 2.044233e-10 7.071792e-10          TRUE
Control - (1.5 mg/L)          550.56171 1.178632e-10 7.071792e-10          TRUE
(0.5 mg/L) - (1.0 mg/L)       220.84843 1.043589e-04 4.174793e-05          TRUE
(0.5 mg/L) - (1.5 mg/L)       253.42514 2.249828e-05 1.687409e-05          TRUE
(1.0 mg/L) - (1.5 mg/L)        32.57671 4.939428e-01 1.626769e-01         FALSE
```

```
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Control - (1.0 mg/L)          517.98500 2.044233e-10 7.071792e-10          TRUE
Control - (1.5 mg/L)          550.56171 1.178632e-10 7.071792e-10          TRUE
(0.5 mg/L) - (1.0 mg/L)       220.84843 1.043589e-04 4.174793e-05          TRUE
(0.5 mg/L) - (1.5 mg/L)       253.42514 2.249828e-05 1.687409e-05          TRUE
(1.0 mg/L) - (1.5 mg/L)        32.57671 4.939428e-01 1.626769e-01         FALSE
```