HW12-R-ajmn100

Pg 621 # 13.12

> per.c14.low <- c(23.37,25.13,23.78,27.74,25.3,25.21,22.12,20.96,23.11,22.57,24.59,23.7)

> per.c14.med <- c(20.39,20.87,20.78,20.19,20.01,20.23,20.73,19.53,18.87,18.17,23.34,22.45)

> per.c14.high <- c(18.87,19.69,19.29,18.1,18.42,19.33,17.26,18.09,18.69,18.82,18.72,18.75)

> ace.con <- factor(c(rep('low',length(per.c14.low)), rep('medium',length(per.c14.med)), rep('high',length(per.c14.high))))

> per.c14 <- c(per.c14.low, per.c14.med, per.c14.high)

> reg <- lm(per.c14 ~ ace.con)

> anova(reg)

Analysis of Variance Table

Response: per.c14

Df Sum Sq Mean Sq F value Pr(>F)

ace.con 2 174.106 87.053 47.008 2.197e-10 \*\*\*

Residuals 33 61.112 1.852

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

1. The p-value < 0.01 => We reject Ho­

Interpretation: At a significance level of 0.01 the evidence suggests that the mean percentage of carbon-14 remaining in the vegetable pulp differs for the different concentrations of acetonitrile used in the extraction process.

1. The following assumption had to be made:
   1. Each of the samples for low, medium, and high concentrations of acetonitrile had to be iid normally distributed. And,
   2. The samples had to be independent from each other with the same variance.