# Análise Doutorado Débora

## Biorigin

### Carregando pacotes

library(tidyverse)  
library(ExpDes.pt)  
library(lme4)  
library(agricolae)  
library(readxl)  
library(janitor)  
library(MASS)  
library(car)

### Entrada de dados

## Lendo os dados  
dados <- read\_xlsx("data/dados\_01.xlsx",  
 sheet = "Análises Fezes") %>%   
 clean\_names() %>%   
 mutate(  
 dose = case\_when(  
 tr == 1 ~ 0,  
 tr == 2 | tr == 5 ~ 0.2,  
 tr == 3 | tr == 6 ~ 0.4,  
 tr == 4 | tr == 7 ~ 0.8  
 ),  
 ingrediente = ifelse(tr==1,"PCL",  
 ifelse(tr > 1 & tr<=4 ,"PCL","PCLs")),  
   
 # transformação dos dados  
 mo = log(mo),  
 fibra\_in = log(fibra\_in),  
 ee\_in = log(ee\_in),  
 amido\_in = log(amido\_in),  
 ph=ph^(-2),  
 am=am^2  
 )  
  
#extraindo o controle  
da <- dados %>% filter(dose==0) %>%   
 mutate(  
 ingrediente="PCLs"  
 )  
  
#duplicando o controle  
dados <- rbind(dados,da)

### Vislumbre

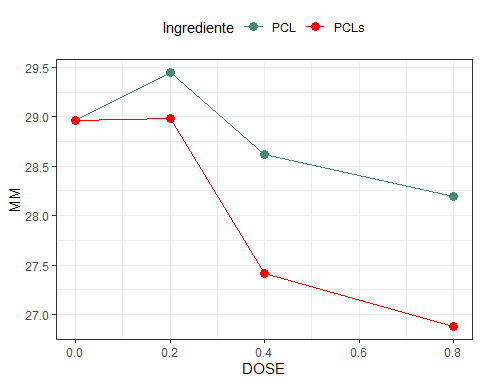
# glimpse(dados)

## Normalidade de Homocedasticidade

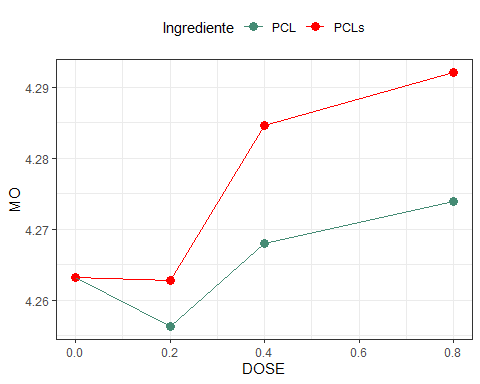
variaveis <- dados %>%   
 dplyr::select(mm:tripta\_mg\_100,-score)  
  
# for(i in seq\_along(variaveis)){  
# nome <- names(variaveis[i])  
# print("====================================")  
# print(str\_to\_upper(nome))  
# print("====================================")  
#   
# daux <- variaveis[i]  
# names(daux) <- "y" ### <-  
# y <- daux$y ### <-   
# bl <- dados$bl %>% as\_factor()  
# tr <- dados$tr %>% as\_factor()  
#   
# mod <- aov(y ~ tr + bl)  
# rs <- mod %>% rstudent()  
# hist(rs, main = paste("Resíduo ", str\_to\_upper(nome)) )  
#   
# print(shapiro.test(rs))  
#   
# plot(y ~ tr)  
#   
# boxcox(mod,seq(-10,10,.5))  
# abline(v=1,col="red",lty=2)  
#   
# preditos <- predict(mod)  
# plot(preditos,rs,  
# main=paste("Estudos de Outliers: ", str\_to\_upper(nome)))  
# abline(h=c(3,-3),col="red")  
# cat("\n")  
# }

## Análise de variância

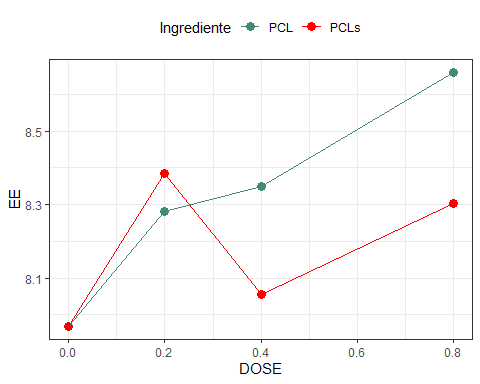
for(i in seq\_along(variaveis)){  
 nome <- names(variaveis[i])  
 print("====================================")  
 print(str\_to\_upper(nome))  
 print("====================================")  
   
 daux <- variaveis[i]  
 names(daux) <- "y" ### <-  
 y <- daux$y ### <-   
 ingred <- dados$ingrediente %>% as\_factor()  
 dose <- dados$dose  
 bl <- dados$bl %>% as\_factor()  
   
 fat2.dbc(ingred,dose,bl,y,quali=c(TRUE,FALSE),  
 fac.names = c("Ingred.","Dose"))  
   
 my\_plot<-tibble(dose,ingred,y) %>%  
 group\_by(dose,ingred) %>%   
 summarise(y=mean(y)) %>%   
 ggplot(aes(x=dose,y=y,color=ingred)) +  
 geom\_point(size=3) +  
 geom\_line() +  
 #facet\_wrap(~ingred,nrow = 2)+  
 theme\_bw() +  
 labs(y=str\_to\_upper(nome),x="DOSE",color="Ingrediente")+  
 theme(legend.position = "top")+  
 scale\_color\_manual(values = c("aquamarine4","red"))   
 print(my\_plot)  
 cat("\n")  
}  
#> [1] "===================================="  
#> [1] "MM"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.505 2 0.7104 0.40297  
#> Ingred. 1 8.924 5 12.5651 0.00081  
#> Dose 3 29.904 6 14.0344 0.00000  
#> Ingred.\*Dose 3 4.698 4 2.2048 0.09781  
#> Residuo 55 39.064 3   
#> Total 63 83.095 1   
#> ------------------------------------------------------------------------  
#> CV = 2.96 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.05651648   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCL 28.80649   
#> b PCLs 28.05964   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 29.1589 0.1632 178.6685 0   
#> b1 -2.0737 0.3561 -5.8228 0   
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.805289  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> =====================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------  
#> Efeito linear 1 24.0814 24.0814 33.91 0   
#> Desvios de Regressao 2 5.8226 2.9113 4.1 0.02191  
#> Residuos 55 39.0640 0.7102   
#> -----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 29.1306 0.2019 144.2908 0   
#> b1 -1.7814 1.2814 -1.3902 0.1701   
#> b2 -0.3528 1.4856 -0.2375 0.8132   
#> ------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.806629  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> =====================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------  
#> Efeito linear 1 24.0814 24.0814 33.91 0   
#> Efeito quadratico 1 0.0401 0.0401 0.06 0.81316  
#> Desvios de Regressao 1 5.7826 5.7826 8.14 0.00609  
#> Residuos 55 39.0640 0.7102   
#> -----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 28.9587 0.2107 137.4459 0   
#> b1 7.5809 3.5225 2.1521 0.0358   
#> b2 -37.9689 13.2666 -2.8620 0.0059   
#> b3 32.8395 11.5091 2.8533 0.0061   
#> ------------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> =====================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------  
#> Efeito linear 1 24.0814 24.0814 33.91 0   
#> Efeito quadratico 1 0.0401 0.0401 0.06 0.81316  
#> Efeito cubico 1 5.7826 5.7826 8.14 0.00609  
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 39.0640 0.7102   
#> -----------------------------------------------------  
#> ------------------------------------------------------------------------



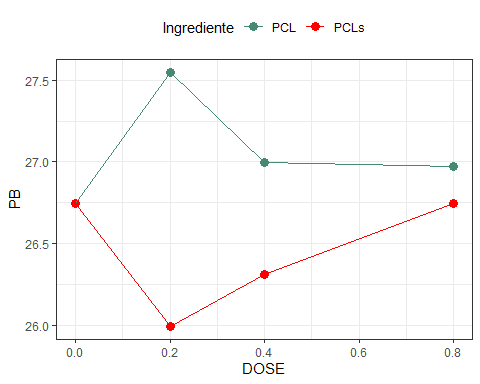
#>   
#> [1] "===================================="  
#> [1] "MO"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.0000923 6 0.6605 0.41990  
#> Ingred. 1 0.0017175 4 12.2967 0.00091  
#> Dose 3 0.0058161 5 13.8801 0.00000  
#> Ingred.\*Dose 3 0.0008962 3 2.1387 0.10578  
#> Residuo 55 0.0076822 2   
#> Total 63 0.0162043 1   
#> ------------------------------------------------------------------------  
#> CV = 0.28 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.04817748   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCLs 4.275687   
#> b PCL 4.265326   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ============================================  
#> Estimativa Erro.padrao tc valor.p  
#> --------------------------------------------  
#> b0 4.2604 0.0023 1,861.5430 0   
#> b1 0.0289 0.0050 5.7867 0   
#> --------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.804169  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ===================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------  
#> Efeito linear 1 0.0047 0.0047 33.49 0   
#> Desvios de Regressao 2 0.0011 0.0006 4.08 0.02233  
#> Residuos 55 0.0077 0.0001   
#> ---------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ============================================  
#> Estimativa Erro.padrao tc valor.p  
#> --------------------------------------------  
#> b0 4.2608 0.0028 1,504.9670 0   
#> b1 0.0246 0.0180 1.3678 0.1769   
#> b2 0.0052 0.0208 0.2503 0.8033   
#> --------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.805674  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> =====================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------  
#> Efeito linear 1 0.0047 0.0047 33.49 0   
#> Efeito quadratico 1 0.00001 0.00001 0.06 0.80326  
#> Desvios de Regressao 1 0.0011 0.0011 8.09 0.00623  
#> Residuos 55 0.0077 0.0001   
#> -----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> ============================================  
#> Estimativa Erro.padrao tc valor.p  
#> --------------------------------------------  
#> b0 4.2632 0.0030 1,442.9000 0   
#> b1 -0.1063 0.0494 -2.1521 0.0358   
#> b2 0.5311 0.1860 2.8548 0.0061   
#> b3 -0.4591 0.1614 -2.8446 0.0062   
#> --------------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> =====================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------  
#> Efeito linear 1 0.0047 0.0047 33.49 0   
#> Efeito quadratico 1 0.00001 0.00001 0.06 0.80326  
#> Efeito cubico 1 0.0011 0.0011 8.09 0.00623  
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 0.0077 0.0001   
#> -----------------------------------------------------  
#> ------------------------------------------------------------------------



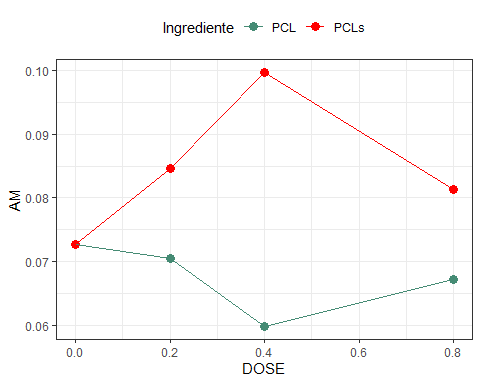
#>   
#> [1] "===================================="  
#> [1] "EE"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.0005 2 0.0036 0.95252  
#> Ingred. 1 0.2967 5 2.1026 0.15273  
#> Dose 3 2.2803 6 5.3867 0.00253  
#> Ingred.\*Dose 3 0.5997 4 1.4167 0.24769  
#> Residuo 55 7.7608 3   
#> Total 63 10.9381 1   
#> ------------------------------------------------------------------------  
#> CV = 4.56 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.2160121   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 8.314474  
#> 2 PCLs 8.178302  
#> ------------------------------------------------------------------------  
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 8.0581 0.0727 110.7751 0   
#> b1 0.5380 0.1587 3.3895 0.0013   
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.710941  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ===================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------  
#> Efeito linear 1 1.6212 1.6212 11.49 0.0013   
#> Desvios de Regressao 2 0.6591 0.3296 2.34 0.10627  
#> Residuos 55 7.7608 0.1411   
#> ---------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 8.0234 0.0900 89.1620 0   
#> b1 0.8974 0.5712 1.5712 0.1219   
#> b2 -0.4337 0.6622 -0.6550 0.5152   
#> -----------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.737486  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> ===================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------  
#> Efeito linear 1 1.6212 1.6212 11.49 0.0013   
#> Efeito quadratico 1 0.0605 0.0605 0.43 0.51522  
#> Desvios de Regressao 1 0.5986 0.5986 4.24 0.04417  
#> Residuos 55 7.7608 0.1411   
#> ---------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 7.9681 0.0939 84.8474 0   
#> b1 3.9096 1.5701 2.4901 0.0158   
#> b2 -12.5365 5.9132 -2.1201 0.0385   
#> b3 10.5660 5.1299 2.0597 0.0442   
#> -----------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> ===================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------  
#> Efeito linear 1 1.6212 1.6212 11.49 0.0013   
#> Efeito quadratico 1 0.0605 0.0605 0.43 0.51522  
#> Efeito cubico 1 0.5986 0.5986 4.24 0.04417  
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 7.7608 0.1411   
#> ---------------------------------------------------  
#> ------------------------------------------------------------------------



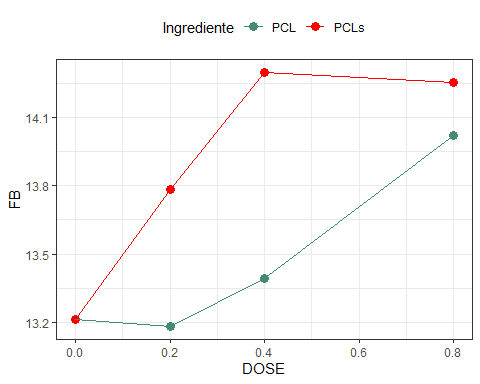
#>   
#> [1] "===================================="  
#> [1] "PB"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 6.134 6 4.3705 0.04120  
#> Ingred. 1 6.114 5 4.3561 0.04152  
#> Dose 3 0.346 2 0.0822 0.96943  
#> Ingred.\*Dose 3 5.693 4 1.3520 0.26707  
#> Residuo 55 77.194 3   
#> Total 63 95.482 1   
#> ------------------------------------------------------------------------  
#> CV = 4.43 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.01108368   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCL 27.06552   
#> b PCLs 26.44737   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 26.74547  
#> 2 0.2 26.76962  
#> 3 0.4 26.65204  
#> 4 0.8 26.85865  
#> ------------------------------------------------------------------------



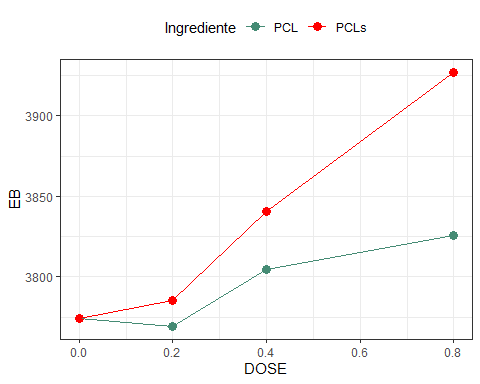
#>   
#> [1] "===================================="  
#> [1] "AM"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.000231 3 0.2833 0.59671  
#> Ingred. 1 0.004625 6 5.6640 0.02081  
#> Dose 3 0.000497 2 0.2029 0.89395  
#> Ingred.\*Dose 3 0.003329 5 1.3592 0.26487  
#> Residuo 55 0.044907 4   
#> Total 63 0.053589 1   
#> ------------------------------------------------------------------------  
#> CV = 37.58 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.0340401   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCLs 0.08452968   
#> b PCL 0.0675287   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 0.07260562  
#> 2 0.2 0.07754448  
#> 3 0.4 0.07974244  
#> 4 0.8 0.07422423  
#> ------------------------------------------------------------------------



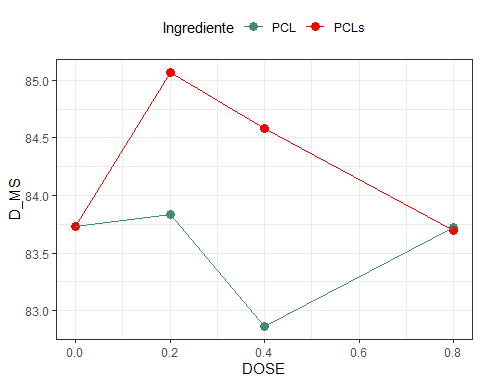
#>   
#> [1] "===================================="  
#> [1] "FB"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1.409 4 4.2811 0.043251  
#> Ingred. 1 3.043 6 9.2465 0.003610  
#> Dose 3 7.948 5 8.0517 0.000154  
#> Ingred.\*Dose 3 1.913 3 1.9381 0.134130  
#> Residuo 55 18.098 2   
#> Total 63 32.410 1   
#> ------------------------------------------------------------------------  
#> CV = 4.2 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.07010748   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCLs 13.88795   
#> b PCL 13.45188   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 13.2614 0.1111 119.3839 0   
#> b1 1.1672 0.2424 4.8150 0.00001  
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.959792  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ====================================================  
#> GL SQ QM Fc valor.p  
#> ----------------------------------------------------  
#> Efeito linear 1 7.6286 7.6286 23.18 1e-05   
#> Desvios de Regressao 2 0.3196 0.1598 0.49 0.61793  
#> Residuos 55 18.0975 0.3290   
#> ----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 13.1915 0.1374 95.9976 0   
#> b1 1.8915 0.8722 2.1687 0.0344   
#> b2 -0.8742 1.0111 -0.8645 0.3911   
#> -----------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.990734  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> ====================================================  
#> GL SQ QM Fc valor.p  
#> ----------------------------------------------------  
#> Efeito linear 1 7.6286 7.6286 23.18 1e-05   
#> Efeito quadratico 1 0.2459 0.2459 0.75 0.39106  
#> Desvios de Regressao 1 0.0736 0.0736 0.22 0.63801  
#> Residuos 55 18.0975 0.3290   
#> ----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 13.2109 0.1434 92.1220 0   
#> b1 0.8349 2.3976 0.3482 0.7290   
#> b2 3.3710 9.0299 0.3733 0.7104   
#> b3 -3.7061 7.8336 -0.4731 0.6380   
#> -----------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> ====================================================  
#> GL SQ QM Fc valor.p  
#> ----------------------------------------------------  
#> Efeito linear 1 7.6286 7.6286 23.18 1e-05   
#> Efeito quadratico 1 0.2459 0.2459 0.75 0.39106  
#> Efeito cubico 1 0.0736 0.0736 0.22 0.63801  
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 18.0975 0.3290   
#> ----------------------------------------------------  
#> ------------------------------------------------------------------------



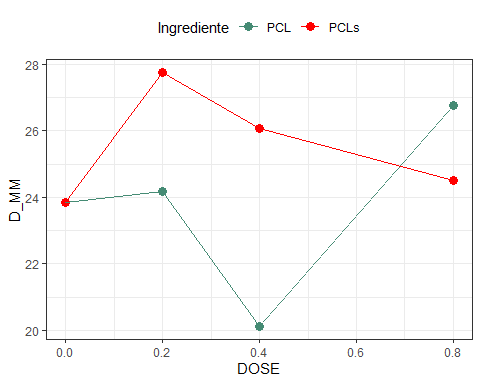
#>   
#> [1] "===================================="  
#> [1] "EB"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1914 2 0.4000 0.52971  
#> Ingred. 1 23640 3 4.9417 0.03035  
#> Dose 3 110084 4 7.6707 0.00023  
#> Ingred.\*Dose 3 23817 6 1.6596 0.18634  
#> Residuo 55 263105 5   
#> Total 63 422559 1   
#> ------------------------------------------------------------------------  
#> CV = 1.81 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.1260179   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCLs 3831.815   
#> b PCL 3793.377   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3,764.6970 13.3936 281.0809 0   
#> b1 136.8560 29.2273 4.6825 0.00002  
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.952777  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ===============================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------------------  
#> Efeito linear 1 104,885.6000 104,885.6000 21.93 2e-05   
#> Desvios de Regressao 2 5,198.4970 2,599.2480 0.54 0.58388  
#> Residuos 55 263,104.9000 4,783.7250   
#> ---------------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3,769.7040 16.5687 227.5201 0   
#> b1 84.9928 105.1616 0.8082 0.4224   
#> b2 62.5936 121.9188 0.5134 0.6097   
#> ------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.964231  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> ===============================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------------------  
#> Efeito linear 1 104,885.6000 104,885.6000 21.93 2e-05   
#> Efeito quadratico 1 1,260.9100 1,260.9100 0.26 0.60973  
#> Desvios de Regressao 1 3,937.5870 3,937.5870 0.82 0.36823  
#> Residuos 55 263,104.9000 4,783.7250   
#> ---------------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3,774.1920 17.2911 218.2734 0   
#> b1 -159.3129 289.0845 -0.5511 0.5838   
#> b2 1,044.1790 1,088.7700 0.9590 0.3417   
#> b3 -856.9396 944.5354 -0.9073 0.3682   
#> ------------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> ===============================================================  
#> GL SQ QM Fc valor.p  
#> ---------------------------------------------------------------  
#> Efeito linear 1 104,885.6000 104,885.6000 21.93 2e-05   
#> Efeito quadratico 1 1,260.9100 1,260.9100 0.26 0.60973  
#> Efeito cubico 1 3,937.5870 3,937.5870 0.82 0.36823  
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 263,104.9000 4,783.7250   
#> ---------------------------------------------------------------  
#> ------------------------------------------------------------------------



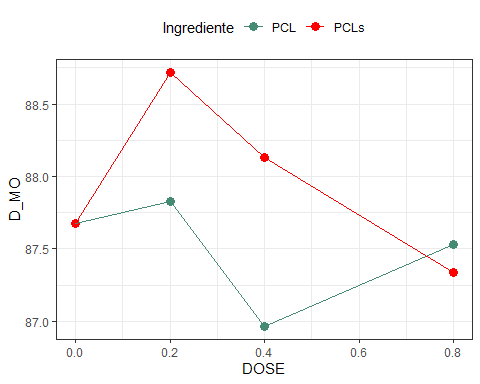
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#> [1] "===================================="  
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#> Legenda:  
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#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 2.232 3 0.8776 0.35296  
#> Ingred. 1 8.542 6 3.3585 0.07228  
#> Dose 3 6.469 2 0.8477 0.47376  
#> Ingred.\*Dose 3 9.388 5 1.2304 0.30745  
#> Residuo 55 139.896 4   
#> Total 63 166.527 1   
#> ------------------------------------------------------------------------  
#> CV = 1.9 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.4204632   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 83.53865  
#> 2 PCLs 84.26934  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 83.73293  
#> 2 0.2 84.45445  
#> 3 0.4 83.71977  
#> 4 0.8 83.70883  
#> ------------------------------------------------------------------------



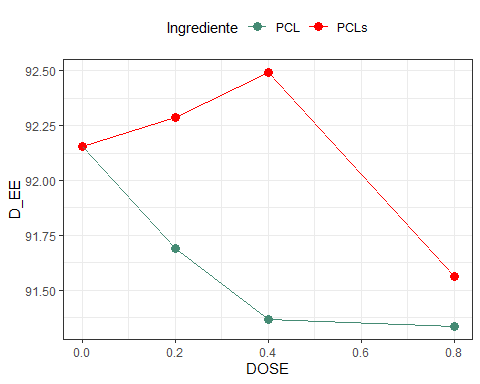
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#> [1] "===================================="  
#> [1] "D\_MM"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 81.6 6 1.59863 0.21143  
#> Ingred. 1 53.1 4 1.04004 0.31228  
#> Dose 3 92.4 2 0.60351 0.61550  
#> Ingred.\*Dose 3 160.8 5 1.05000 0.37787  
#> Residuo 55 2807.1 3   
#> Total 63 3194.9 1   
#> ------------------------------------------------------------------------  
#> CV = 29 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.06658798   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 23.72159  
#> 2 PCLs 25.54301  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 23.83639  
#> 2 0.2 25.96502  
#> 3 0.4 23.09471  
#> 4 0.8 25.63308  
#> ------------------------------------------------------------------------



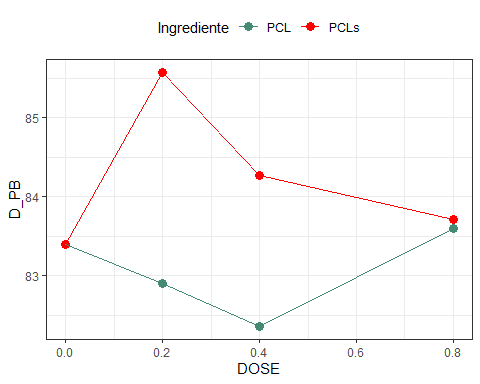
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#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1.030 2 0.64366 0.42584  
#> Ingred. 1 3.511 6 2.19289 0.14436  
#> Dose 3 6.708 5 1.39681 0.25351  
#> Ingred.\*Dose 3 5.312 4 1.10615 0.35451  
#> Residuo 55 88.047 3   
#> Total 63 104.609 1   
#> ------------------------------------------------------------------------  
#> CV = 1.44 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.5374832   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 87.49854  
#> 2 PCLs 87.96695  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 87.67530  
#> 2 0.2 88.27352  
#> 3 0.4 87.54906  
#> 4 0.8 87.43310  
#> ------------------------------------------------------------------------



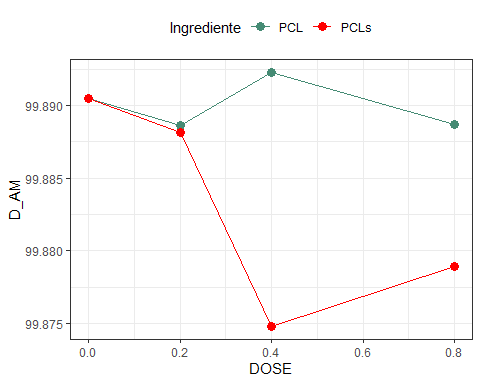
#>   
#> [1] "===================================="  
#> [1] "D\_EE"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.546 2 0.5973 0.44292  
#> Ingred. 1 3.790 6 4.1433 0.04663  
#> Dose 3 4.437 5 1.6169 0.19595  
#> Ingred.\*Dose 3 2.891 4 1.0535 0.37636  
#> Residuo 55 50.311 3   
#> Total 63 61.976 1   
#> ------------------------------------------------------------------------  
#> CV = 1.04 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.3058441   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCLs 92.12388   
#> b PCL 91.63717   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 92.15598  
#> 2 0.2 91.98798  
#> 3 0.4 91.93051  
#> 4 0.8 91.44763  
#> ------------------------------------------------------------------------



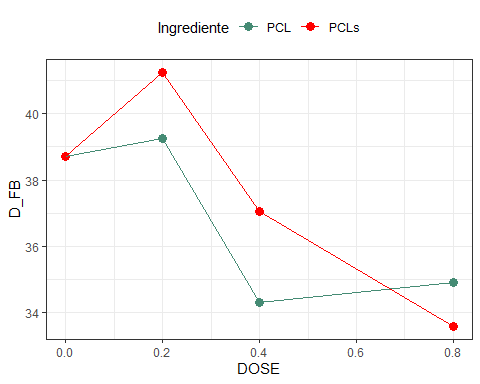
#>   
#> [1] "===================================="  
#> [1] "D\_PB"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.009 2 0.0025 0.96016  
#> Ingred. 1 22.038 4 5.8899 0.01853  
#> Dose 3 8.368 3 0.7455 0.52961  
#> Ingred.\*Dose 3 21.283 6 1.8960 0.14097  
#> Residuo 55 205.793 5   
#> Total 63 257.492 1   
#> ------------------------------------------------------------------------  
#> CV = 2.31 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.6187615   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> Teste de Tukey  
#> ------------------------------------------------------------------------  
#> Grupos Tratamentos Medias  
#> a PCLs 84.23684   
#> b PCL 83.06322   
#> ------------------------------------------------------------------------  
#>   
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 83.39175  
#> 2 0.2 84.23727  
#> 3 0.4 83.31623  
#> 4 0.8 83.65487  
#> ------------------------------------------------------------------------



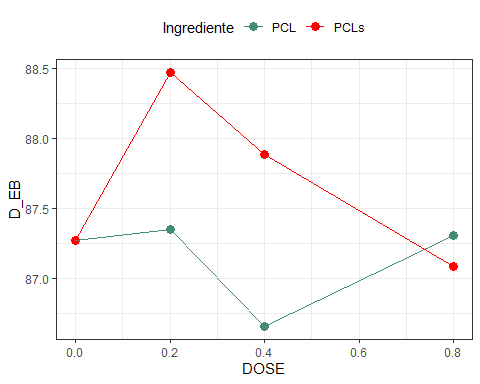
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#> [1] "===================================="  
#> [1] "D\_AM"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.000083 6 0.10245 0.75012  
#> Ingred. 1 0.000770 4 0.95459 0.33283  
#> Dose 3 0.000567 2 0.23430 0.87209  
#> Ingred.\*Dose 3 0.000836 3 0.34543 0.79256  
#> Residuo 55 0.044365 5   
#> Total 63 0.046621 1   
#> ------------------------------------------------------------------------  
#> CV = 0.03 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 3.387009e-05   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 99.89003  
#> 2 PCLs 99.88309  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 99.89048  
#> 2 0.2 99.88839  
#> 3 0.4 99.88353  
#> 4 0.8 99.88382  
#> ------------------------------------------------------------------------



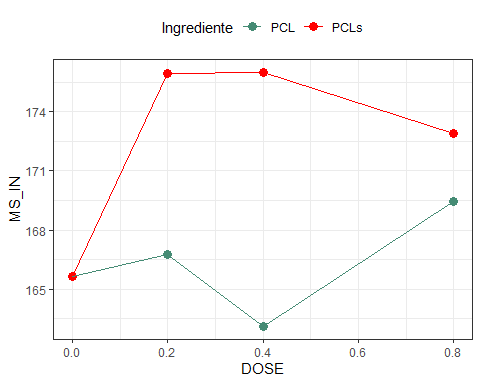
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#> [1] "===================================="  
#> [1] "D\_FB"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 127.99 4 3.3756 0.07157  
#> Ingred. 1 11.62 2 0.3066 0.58202  
#> Dose 3 362.49 3 3.1869 0.03074  
#> Ingred.\*Dose 3 41.41 5 0.3641 0.77917  
#> Residuo 55 2085.34 6   
#> Total 63 2628.86 1   
#> ------------------------------------------------------------------------  
#> CV = 16.55 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.6607382   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 36.79068  
#> 2 PCLs 37.64305  
#> ------------------------------------------------------------------------  
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 39.6072 1.1924 33.2163 0   
#> b1 -6.8296 2.6020 -2.6247 0.0112   
#> -----------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.720577  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ========================================================  
#> GL SQ QM Fc valor.p  
#> --------------------------------------------------------  
#> Efeito linear 1 261.2047 261.2047 6.89 0.01121  
#> Desvios de Regressao 2 101.2892 50.6446 1.34 0.27136  
#> Residuos 55 2,085.3400 37.9153   
#> --------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 39.4120 1.4751 26.7188 0   
#> b1 -4.8075 9.3623 -0.5135 0.6097   
#> b2 -2.4405 10.8541 -0.2248 0.8229   
#> -----------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.725865  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> ========================================================  
#> GL SQ QM Fc valor.p  
#> --------------------------------------------------------  
#> Efeito linear 1 261.2047 261.2047 6.89 0.01121  
#> Efeito quadratico 1 1.9168 1.9168 0.05 0.82293  
#> Desvios de Regressao 1 99.3723 99.3723 2.62 0.11119  
#> Residuos 55 2,085.3400 37.9153   
#> --------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 38.6991 1.5394 25.1394 0   
#> b1 34.0032 25.7365 1.3212 0.1919   
#> b2 -158.3763 96.9304 -1.6339 0.1080   
#> b3 136.1344 84.0896 1.6189 0.1112   
#> -----------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> ========================================================  
#> GL SQ QM Fc valor.p  
#> --------------------------------------------------------  
#> Efeito linear 1 261.2047 261.2047 6.89 0.01121  
#> Efeito quadratico 1 1.9168 1.9168 0.05 0.82293  
#> Efeito cubico 1 99.3723 99.3723 2.62 0.11119  
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 2,085.3400 37.9153   
#> --------------------------------------------------------  
#> ------------------------------------------------------------------------



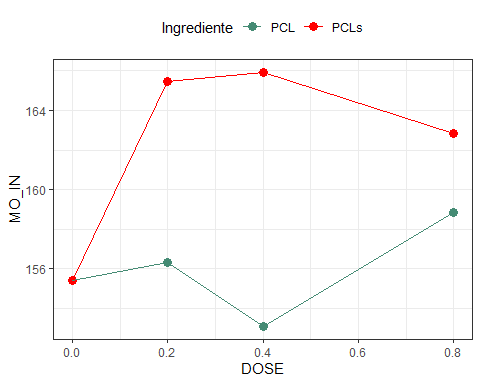
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#> [1] "===================================="  
#> [1] "D\_EB"  
#> [1] "===================================="  
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#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1.040 2 0.5903 0.44559  
#> Ingred. 1 4.556 6 2.5864 0.11351  
#> Dose 3 5.319 4 1.0066 0.39689  
#> Ingred.\*Dose 3 6.735 5 1.2746 0.29213  
#> Residuo 55 96.877 3   
#> Total 63 114.527 1   
#> ------------------------------------------------------------------------  
#> CV = 1.52 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.6042644   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 87.14719  
#> 2 PCLs 87.68079  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 87.27155  
#> 2 0.2 87.91071  
#> 3 0.4 87.27324  
#> 4 0.8 87.20045  
#> ------------------------------------------------------------------------



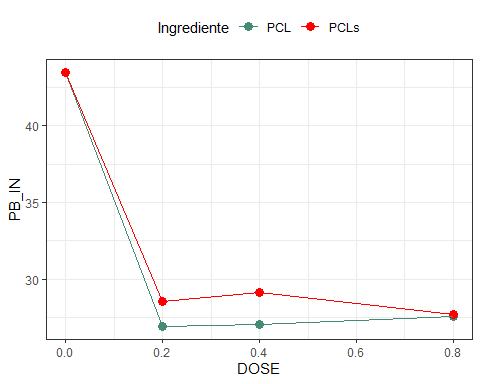
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#> [1] "MS\_IN"  
#> [1] "===================================="  
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#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 37.9 4 0.07958 0.77893  
#> Ingred. 1 653.2 6 1.37266 0.24641  
#> Dose 3 339.1 2 0.23754 0.86980  
#> Ingred.\*Dose 3 401.3 3 0.28108 0.83882  
#> Residuo 55 26171.8 5   
#> Total 63 27603.2 1   
#> ------------------------------------------------------------------------  
#> CV = 12.88 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.05319403   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 166.2335  
#> 2 PCLs 172.6229  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 165.6326  
#> 2 0.2 171.3638  
#> 3 0.4 169.5486  
#> 4 0.8 171.1678  
#> ------------------------------------------------------------------------



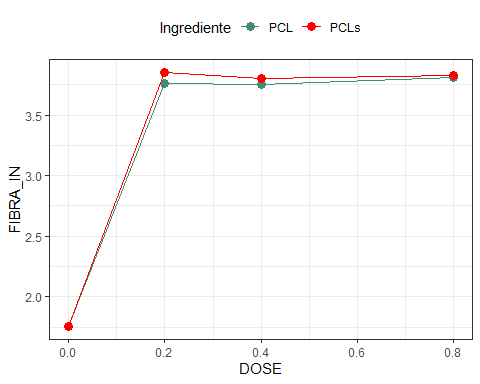
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#> Legenda:  
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#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 33.4 4 0.07946 0.77909  
#> Ingred. 1 675.3 6 1.60664 0.21031  
#> Dose 3 320.2 2 0.25393 0.85821  
#> Ingred.\*Dose 3 383.2 3 0.30387 0.82246  
#> Residuo 55 23118.6 5   
#> Total 63 24530.7 1   
#> ------------------------------------------------------------------------  
#> CV = 12.88 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.05358321   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 155.9086  
#> 2 PCLs 162.4054  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 155.4039  
#> 2 0.2 160.8722  
#> 3 0.4 159.5018  
#> 4 0.8 160.8501  
#> ------------------------------------------------------------------------



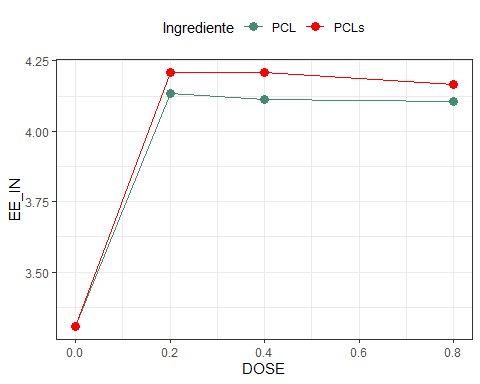
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#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1.2 2 0.075 0.78553  
#> Ingred. 1 15.4 3 0.999 0.32203  
#> Dose 3 2947.8 6 63.781 0.00000  
#> Ingred.\*Dose 3 13.3 5 0.287 0.83434  
#> Residuo 55 847.3 4   
#> Total 63 3825.0 1   
#> ------------------------------------------------------------------------  
#> CV = 12.37 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.3771592   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 31.24486  
#> 2 PCLs 32.22542  
#> ------------------------------------------------------------------------  
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 37.2726 0.7601 49.0375 0   
#> b1 -15.8213 1.6586 -9.5387 0   
#> -----------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.475519  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ===========================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------------  
#> Efeito linear 1 1,401.7580 1,401.7580 90.99 0   
#> Desvios de Regressao 2 1,546.0890 773.0446 50.18 0   
#> Residuos 55 847.3316 15.4060   
#> -----------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 42.1395 0.9403 44.8167 0   
#> b1 -66.2284 5.9679 -11.0975 0   
#> b2 60.8361 6.9188 8.7928 0   
#> ------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.879576  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> ===========================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------------  
#> Efeito linear 1 1,401.7580 1,401.7580 90.99 0   
#> Efeito quadratico 1 1,191.0970 1,191.0970 77.31 0   
#> Desvios de Regressao 1 354.9920 354.9920 23.04 1e-05   
#> Residuos 55 847.3316 15.4060   
#> -----------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> =========================================  
#> Estimativa Erro.padrao tc valor.p  
#> -----------------------------------------  
#> b0 43.4868 0.9813 44.3172 0   
#> b1 -139.5830 16.4054 -8.5084 0   
#> b2 355.5647 61.7872 5.7547 0   
#> b3 -257.3027 53.6019 -4.8002 0.00001  
#> -----------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> ===========================================================  
#> GL SQ QM Fc valor.p  
#> -----------------------------------------------------------  
#> Efeito linear 1 1,401.7580 1,401.7580 90.99 0   
#> Efeito quadratico 1 1,191.0970 1,191.0970 77.31 0   
#> Efeito cubico 1 354.9920 354.9920 23.04 1e-05   
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 847.3316 15.4060   
#> -----------------------------------------------------------  
#> ------------------------------------------------------------------------



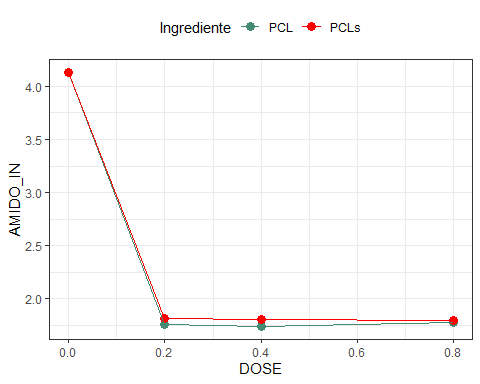
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#> [1] "FIBRA\_IN"  
#> [1] "===================================="  
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#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.001 2 0.05 0.82164  
#> Ingred. 1 0.026 5 1.60 0.21059  
#> Dose 3 50.331 6 1048.40 0.00000  
#> Ingred.\*Dose 3 0.020 3 0.41 0.74797  
#> Residuo 55 0.880 4   
#> Total 63 51.257 1   
#> ------------------------------------------------------------------------  
#> CV = 3.85 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.07756398   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 3.268898  
#> 2 PCLs 3.308959  
#> ------------------------------------------------------------------------  
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 2.5666 0.0245 104.7719 0   
#> b1 2.0639 0.0535 38.6092 0   
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.473951  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> =======================================================  
#> GL SQ QM Fc valor.p  
#> -------------------------------------------------------  
#> Efeito linear 1 23.8542 23.8542 1490.67 0   
#> Desvios de Regressao 2 26.4764 13.2382 827.27 0   
#> Residuos 55 0.8801 0.0160   
#> -------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 1.9269 0.0303 63.5848 0   
#> b1 8.6895 0.1923 45.1780 0   
#> b2 -7.9964 0.2230 -35.8603 0   
#> ------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.882814  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> =======================================================  
#> GL SQ QM Fc valor.p  
#> -------------------------------------------------------  
#> Efeito linear 1 23.8542 23.8542 1490.67 0   
#> Efeito quadratico 1 20.5783 20.5783 1285.96 0   
#> Desvios de Regressao 1 5.8981 5.8981 368.58 0   
#> Residuos 55 0.8801 0.0160   
#> -------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 1.7532 0.0316 55.4366 0   
#> b1 18.1447 0.5287 34.3176 0   
#> b2 -45.9862 1.9913 -23.0932 0   
#> b3 33.1657 1.7275 19.1983 0   
#> ------------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> =======================================================  
#> GL SQ QM Fc valor.p  
#> -------------------------------------------------------  
#> Efeito linear 1 23.8542 23.8542 1490.67 0   
#> Efeito quadratico 1 20.5783 20.5783 1285.96 0   
#> Efeito cubico 1 5.8981 5.8981 368.58 0   
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 0.8801 0.0160   
#> -------------------------------------------------------  
#> ------------------------------------------------------------------------



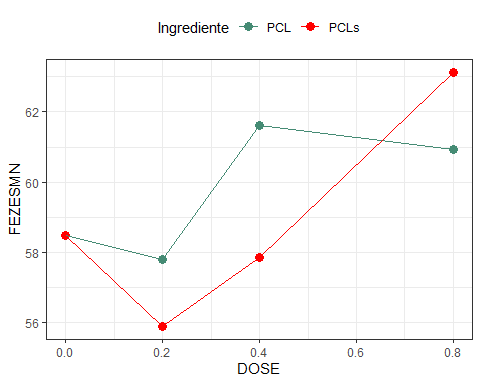
#>   
#> [1] "===================================="  
#> [1] "EE\_IN"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.0008 2 0.051 0.82164  
#> Ingred. 1 0.0524 5 3.272 0.07592  
#> Dose 3 8.6887 6 180.988 0.00000  
#> Ingred.\*Dose 3 0.0200 3 0.417 0.74179  
#> Residuo 55 0.8801 4   
#> Total 63 9.6420 1   
#> ------------------------------------------------------------------------  
#> CV = 3.21 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.07756398   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 3.915152  
#> 2 PCLs 3.972361  
#> ------------------------------------------------------------------------  
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3.6573 0.0245 149.2961 0   
#> b1 0.8186 0.0535 15.3130 0   
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.431864  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> ====================================================  
#> GL SQ QM Fc valor.p  
#> ----------------------------------------------------  
#> Efeito linear 1 3.7523 3.7523 234.49 0   
#> Desvios de Regressao 2 4.9364 2.4682 154.24 0   
#> Residuos 55 0.8801 0.0160   
#> ----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3.3774 0.0303 111.4508 0   
#> b1 3.7174 0.1923 19.3272 0   
#> b2 -3.4985 0.2230 -15.6895 0   
#> ------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.885227  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> ====================================================  
#> GL SQ QM Fc valor.p  
#> ----------------------------------------------------  
#> Efeito linear 1 3.7523 3.7523 234.49 0   
#> Efeito quadratico 1 3.9391 3.9391 246.16 0   
#> Desvios de Regressao 1 0.9972 0.9972 62.32 0   
#> Residuos 55 0.8801 0.0160   
#> ----------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3.3060 0.0316 104.5362 0   
#> b1 7.6053 0.5287 14.3841 0   
#> b2 -19.1196 1.9913 -9.6014 0   
#> b3 13.6374 1.7275 7.8942 0   
#> ------------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> ====================================================  
#> GL SQ QM Fc valor.p  
#> ----------------------------------------------------  
#> Efeito linear 1 3.7523 3.7523 234.49 0   
#> Efeito quadratico 1 3.9391 3.9391 246.16 0   
#> Efeito cubico 1 0.9972 0.9972 62.32 0   
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 0.8801 0.0160   
#> ----------------------------------------------------  
#> ------------------------------------------------------------------------



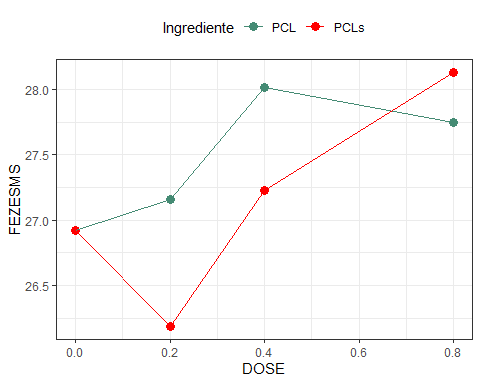
#>   
#> [1] "===================================="  
#> [1] "AMIDO\_IN"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.001 2 0.05 0.82164  
#> Ingred. 1 0.021 5 1.34 0.25211  
#> Dose 3 66.483 6 1384.85 0.00000  
#> Ingred.\*Dose 3 0.013 3 0.27 0.84438  
#> Residuo 55 0.880 4   
#> Total 63 67.398 1   
#> ------------------------------------------------------------------------  
#> CV = 5.34 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.07756398   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 2.349357  
#> 2 PCLs 2.385959  
#> ------------------------------------------------------------------------  
#> Dose  
#> Ajuste de modelos polinomiais de regressao  
#> ------------------------------------------------------------------------  
#>   
#> Modelo Linear  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3.1904 0.0245 130.2363 0   
#> b1 -2.3506 0.0535 -43.9718 0   
#> ------------------------------------------  
#>   
#> R2 do modelo linear  
#> --------  
#> 0.465397  
#> --------  
#>   
#> Analise de variancia do modelo linear  
#> =======================================================  
#> GL SQ QM Fc valor.p  
#> -------------------------------------------------------  
#> Efeito linear 1 30.9408 30.9408 1933.52 0   
#> Desvios de Regressao 2 35.5418 17.7709 1110.52 0   
#> Residuos 55 0.8801 0.0160   
#> -------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo quadratico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 3.9426 0.0303 130.1025 0   
#> b1 -10.1415 0.1923 -52.7276 0   
#> b2 9.4029 0.2230 42.1680 0   
#> ------------------------------------------  
#>   
#> R2 do modelo quadratico  
#> --------  
#> 0.893394  
#> --------  
#>   
#> Analise de variancia do modelo quadratico  
#> =======================================================  
#> GL SQ QM Fc valor.p  
#> -------------------------------------------------------  
#> Efeito linear 1 30.9408 30.9408 1933.52 0   
#> Efeito quadratico 1 28.4543 28.4543 1778.14 0   
#> Desvios de Regressao 1 7.0875 7.0875 442.9 0   
#> Residuos 55 0.8801 0.0160   
#> -------------------------------------------------------  
#> ------------------------------------------------------------------------  
#>   
#> Modelo cubico  
#> ==========================================  
#> Estimativa Erro.padrao tc valor.p  
#> ------------------------------------------  
#> b0 4.1330 0.0316 130.6863 0   
#> b1 -20.5064 0.5287 -38.7844 0   
#> b2 51.0475 1.9913 25.6348 0   
#> b3 -36.3564 1.7275 -21.0453 0   
#> ------------------------------------------  
#>   
#> R2 do modelo cubico  
#> -  
#> 1  
#> -  
#>   
#> Analise de variancia do modelo cubico  
#> =======================================================  
#> GL SQ QM Fc valor.p  
#> -------------------------------------------------------  
#> Efeito linear 1 30.9408 30.9408 1933.52 0   
#> Efeito quadratico 1 28.4543 28.4543 1778.14 0   
#> Efeito cubico 1 7.0875 7.0875 442.9 0   
#> Desvios de Regressao 0 0 0 0 1   
#> Residuos 55 0.8801 0.0160   
#> -------------------------------------------------------  
#> ------------------------------------------------------------------------



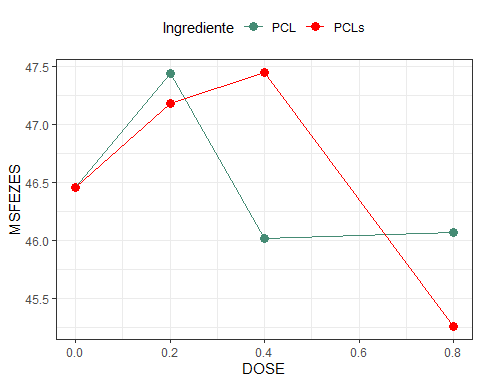
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#> [1] "FEZESMN"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 119.6 2 0.75263 0.38941  
#> Ingred. 1 12.1 3 0.07634 0.78336  
#> Dose 3 231.4 6 0.48526 0.69391  
#> Ingred.\*Dose 3 78.4 5 0.16448 0.91984  
#> Residuo 55 8742.9 4   
#> Total 63 9184.6 1   
#> ------------------------------------------------------------------------  
#> CV = 21.27 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.01192624   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 59.69812  
#> 2 PCLs 58.82725  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 58.46700  
#> 2 0.2 56.82700  
#> 3 0.4 59.72150  
#> 4 0.8 62.03525  
#> ------------------------------------------------------------------------



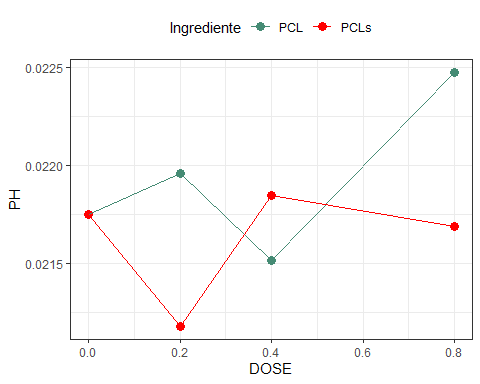
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#> [1] "===================================="  
#> [1] "FEZESMS"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 3.24 5 0.150906 0.69917  
#> Ingred. 1 1.91 3 0.088725 0.76693  
#> Dose 3 16.68 6 0.258621 0.85487  
#> Ingred.\*Dose 3 5.02 2 0.077802 0.97175  
#> Residuo 55 1182.12 4   
#> Total 63 1208.96 1   
#> ------------------------------------------------------------------------  
#> CV = 16.99 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.255088   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 27.46157  
#> 2 PCLs 27.11634  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 26.92400  
#> 2 0.2 26.67375  
#> 3 0.4 27.62061  
#> 4 0.8 27.93746  
#> ------------------------------------------------------------------------



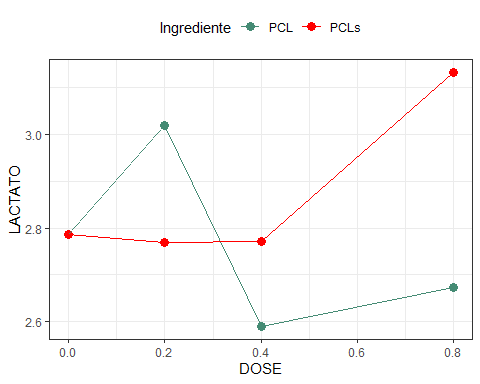
#>   
#> [1] "===================================="  
#> [1] "MSFEZES"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 148.25 4 12.4771 0.00084  
#> Ingred. 1 0.13 2 0.0110 0.91668  
#> Dose 3 22.47 6 0.6302 0.59860  
#> Ingred.\*Dose 3 10.90 5 0.3057 0.82114  
#> Residuo 55 653.51 3   
#> Total 63 835.26 1   
#> ------------------------------------------------------------------------  
#> CV = 7.41 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.08349228   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 46.49661  
#> 2 PCLs 46.58718  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 46.46022  
#> 2 0.2 47.30962  
#> 3 0.4 46.73399  
#> 4 0.8 45.66375  
#> ------------------------------------------------------------------------



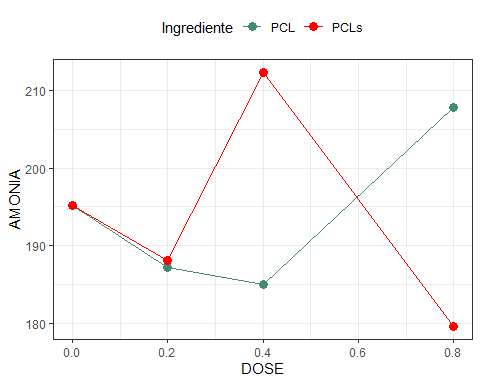
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#> [1] "===================================="  
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#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1.8030e-06 5 1.21458 0.27523  
#> Ingred. 1 1.5220e-06 4 1.02500 0.31577  
#> Dose 3 2.3330e-06 6 0.52383 0.66772  
#> Ingred.\*Dose 3 3.8250e-06 2 0.85899 0.46792  
#> Residuo 55 8.1645e-05 3   
#> Total 63 9.1128e-05 1   
#> ------------------------------------------------------------------------  
#> CV = 5.6 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.2533306   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 0.02192561  
#> 2 PCLs 0.02161723  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 0.02175126  
#> 2 0.2 0.02156983  
#> 3 0.4 0.02168209  
#> 4 0.8 0.02208251  
#> ------------------------------------------------------------------------



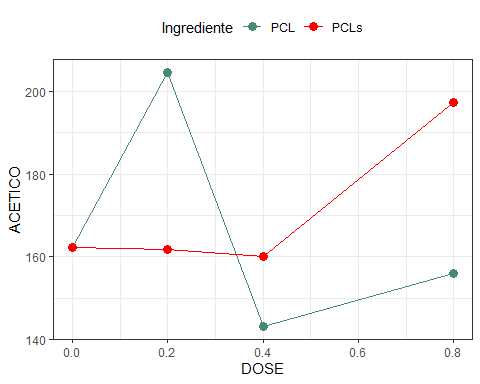
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#> [1] "===================================="  
#> [1] "LACTATO"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 2.6157 6 10.3943 0.00213  
#> Ingred. 1 0.1547 2 0.6149 0.43630  
#> Dose 3 0.5237 3 0.6938 0.55980  
#> Ingred.\*Dose 3 1.0745 5 1.4233 0.24581  
#> Residuo 55 13.8405 4   
#> Total 63 18.2092 1   
#> ------------------------------------------------------------------------  
#> CV = 17.82 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.001530524   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 2.766378  
#> 2 PCLs 2.864722  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 2.785631  
#> 2 0.2 2.893291  
#> 3 0.4 2.680617  
#> 4 0.8 2.902661  
#> ------------------------------------------------------------------------



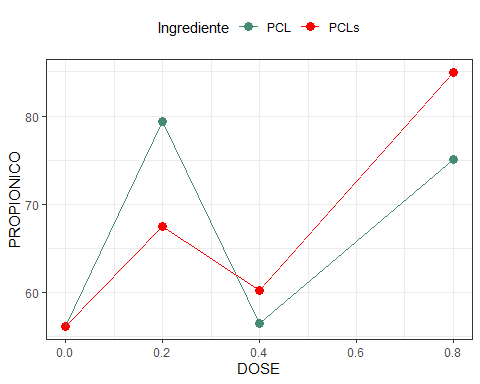
#>   
#> [1] "===================================="  
#> [1] "AMONIA"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 2342 5 1.64522 0.20499  
#> Ingred. 1 0 2 0.00001 0.99759  
#> Dose 3 1022 6 0.23936 0.86852  
#> Ingred.\*Dose 3 6226 4 1.45779 0.23610  
#> Residuo 55 78300 3   
#> Total 63 87890 1   
#> ------------------------------------------------------------------------  
#> CV = 19.47 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.2257078   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 193.7703  
#> 2 PCLs 193.7990  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 195.1438  
#> 2 0.2 187.6213  
#> 3 0.4 198.6886  
#> 4 0.8 193.6849  
#> ------------------------------------------------------------------------



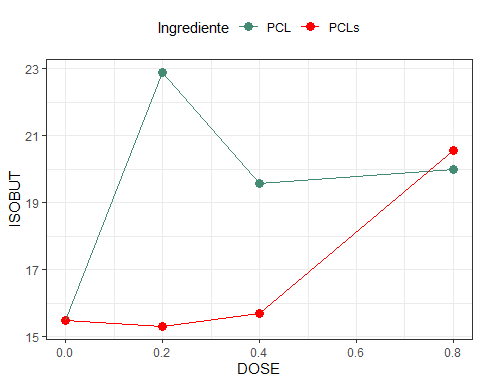
#>   
#> [1] "===================================="  
#> [1] "ACETICO"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 22381 2 7.3512 0.00892  
#> Ingred. 1 239 3 0.0785 0.78043  
#> Dose 3 9775 5 1.0702 0.36930  
#> Ingred.\*Dose 3 15072 6 1.6501 0.18843  
#> Residuo 55 167449 4   
#> Total 63 214915 1   
#> ------------------------------------------------------------------------  
#> CV = 32.77 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.8117557   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 166.4641  
#> 2 PCLs 170.3282  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 162.1573  
#> 2 0.2 183.2692  
#> 3 0.4 151.5586  
#> 4 0.8 176.5996  
#> ------------------------------------------------------------------------



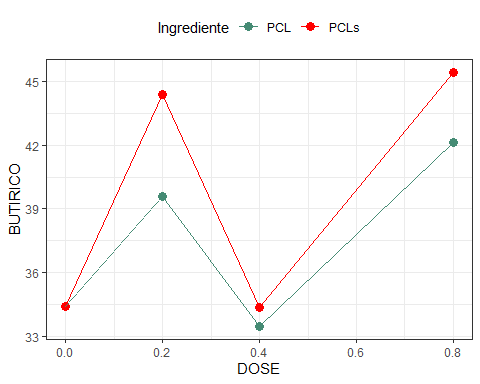
#>   
#> [1] "===================================="  
#> [1] "PROPIONICO"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 2171 4 2.76485 0.10204  
#> Ingred. 1 3 2 0.00342 0.95360  
#> Dose 3 6429 3 2.72939 0.05261  
#> Ingred.\*Dose 3 1013 5 0.42983 0.73244  
#> Residuo 55 43187 6   
#> Total 63 52802 1   
#> ------------------------------------------------------------------------  
#> CV = 41.83 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.00824109   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 66.78568  
#> 2 PCLs 67.19515  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 56.15392  
#> 2 0.2 73.41836  
#> 3 0.4 58.39253  
#> 4 0.8 79.99685  
#> ------------------------------------------------------------------------



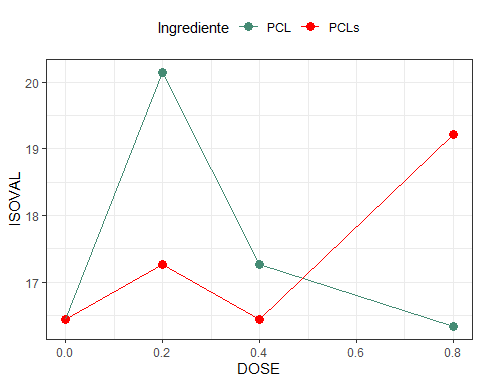
#>   
#> [1] "===================================="  
#> [1] "ISOBUT"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 345.7 3 8.0552 0.006344  
#> Ingred. 1 119.6 2 2.7860 0.100775  
#> Dose 3 205.7 6 1.5976 0.200426  
#> Ingred.\*Dose 3 174.0 5 1.3512 0.267317  
#> Residuo 55 2360.2 4   
#> Total 63 3205.0 1   
#> ------------------------------------------------------------------------  
#> CV = 36.15 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 2.117941e-06   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 19.48857  
#> 2 PCLs 16.75506  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 15.47381  
#> 2 0.2 19.09549  
#> 3 0.4 17.63745  
#> 4 0.8 20.28051  
#> ------------------------------------------------------------------------



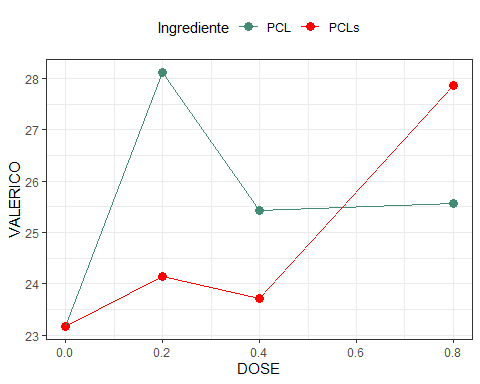
#>   
#> [1] "===================================="  
#> [1] "BUTIRICO"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1330.2 2 5.8137 0.01927  
#> Ingred. 1 81.4 6 0.3555 0.55344  
#> Dose 3 1253.0 5 1.8254 0.15325  
#> Ingred.\*Dose 3 58.0 3 0.0845 0.96823  
#> Residuo 55 12584.4 4   
#> Total 63 15307.0 1   
#> ------------------------------------------------------------------------  
#> CV = 39.27 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.1415014   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 37.39305  
#> 2 PCLs 39.64792  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 34.39709  
#> 2 0.2 42.00217  
#> 3 0.4 33.89247  
#> 4 0.8 43.79021  
#> ------------------------------------------------------------------------



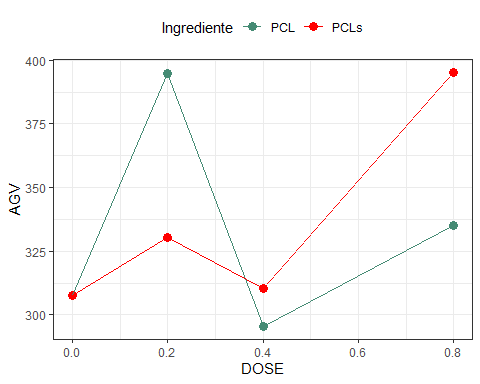
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#> [1] "===================================="  
#> [1] "ISOVAL"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 114.46 4 10.2016 0.00232  
#> Ingred. 1 0.68 2 0.0605 0.80666  
#> Dose 3 48.92 5 1.4534 0.23732  
#> Ingred.\*Dose 3 68.97 6 2.0490 0.11763  
#> Residuo 55 617.10 3   
#> Total 63 850.13 1   
#> ------------------------------------------------------------------------  
#> CV = 19.2 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.0002852673   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 17.54637  
#> 2 PCLs 17.34043  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 16.44322  
#> 2 0.2 18.70631  
#> 3 0.4 16.84957  
#> 4 0.8 17.77449  
#> ------------------------------------------------------------------------



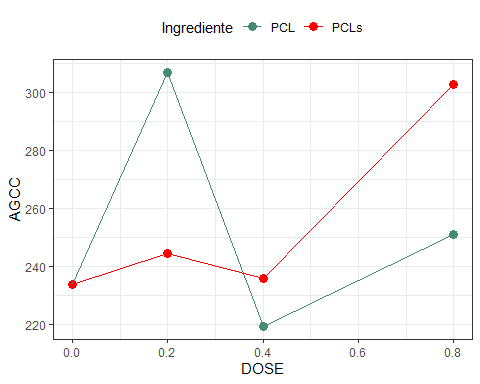
#>   
#> [1] "===================================="  
#> [1] "VALERICO"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 471.7 5 7.7070 0.00750  
#> Ingred. 1 11.5 2 0.1878 0.66641  
#> Dose 3 122.8 4 0.6688 0.57481  
#> Ingred.\*Dose 3 84.4 3 0.4596 0.71160  
#> Residuo 55 3366.0 6   
#> Total 63 4056.4 1   
#> ------------------------------------------------------------------------  
#> CV = 31.11 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.0001859618   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 25.57084  
#> 2 PCLs 24.72318  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 23.16677  
#> 2 0.2 26.13432  
#> 3 0.4 24.57444  
#> 4 0.8 26.71251  
#> ------------------------------------------------------------------------



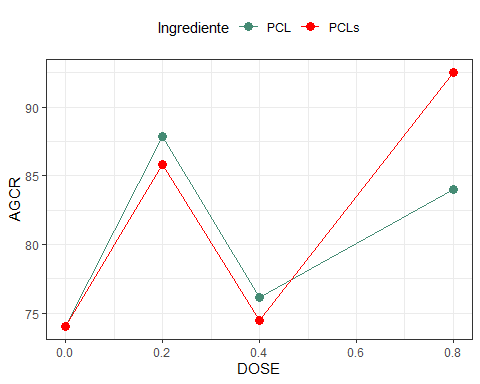
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#> [1] "===================================="  
#> [1] "AGV"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 80473 5 9.7437 0.00287  
#> Ingred. 1 120 3 0.0146 0.90440  
#> Dose 3 55076 4 2.2229 0.09575  
#> Ingred.\*Dose 3 31923 2 1.2884 0.28752  
#> Residuo 55 454242 6   
#> Total 63 621833 1   
#> ------------------------------------------------------------------------  
#> CV = 27.16 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.39312   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 333.2486  
#> 2 PCLs 335.9899  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 307.7921  
#> 2 0.2 362.6258  
#> 3 0.4 302.9050  
#> 4 0.8 365.1541  
#> ------------------------------------------------------------------------



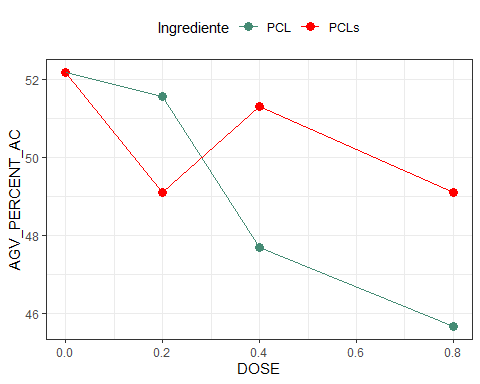
#>   
#> [1] "===================================="  
#> [1] "AGCC"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 46134 4 7.9225 0.00676  
#> Ingred. 1 38 3 0.0065 0.93595  
#> Dose 3 33650 2 1.9262 0.13604  
#> Ingred.\*Dose 3 27359 6 1.5661 0.20798  
#> Residuo 55 320275 5   
#> Total 63 427455 1   
#> ------------------------------------------------------------------------  
#> CV = 30.1 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.5679774   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 252.7384  
#> 2 PCLs 254.2784  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 233.7851  
#> 2 0.2 275.7830  
#> 3 0.4 227.5886  
#> 4 0.8 276.8769  
#> ------------------------------------------------------------------------



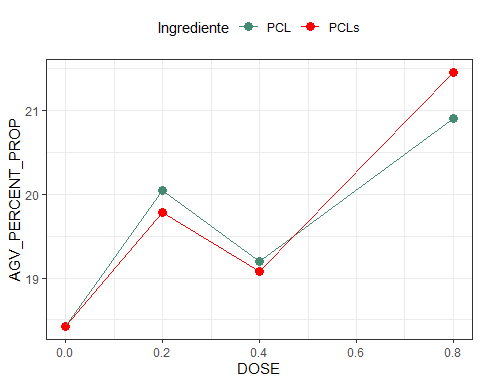
#>   
#> [1] "===================================="  
#> [1] "AGCR"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 4746 3 9.2939 0.00353  
#> Ingred. 1 23 2 0.0452 0.83239  
#> Dose 3 2692 5 1.7573 0.16607  
#> Ingred.\*Dose 3 294 6 0.1917 0.90159  
#> Residuo 55 28084 4   
#> Total 63 35839 1   
#> ------------------------------------------------------------------------  
#> CV = 27.86 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.002454502   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 80.51026  
#> 2 PCLs 81.71153  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 74.00708  
#> 2 0.2 86.84281  
#> 3 0.4 75.31647  
#> 4 0.8 88.27721  
#> ------------------------------------------------------------------------



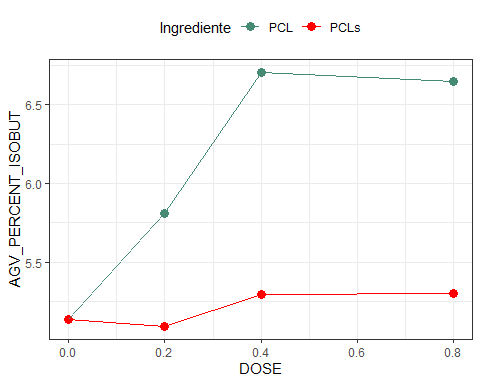
#>   
#> [1] "===================================="  
#> [1] "AGV\_PERCENT\_AC"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 3.5 3 0.06209 0.80416  
#> Ingred. 1 21.1 2 0.37083 0.54506  
#> Dose 3 191.2 6 1.11827 0.34964  
#> Ingred.\*Dose 3 103.4 4 0.60484 0.61465  
#> Residuo 55 3134.8 5   
#> Total 63 3454.1 1   
#> ------------------------------------------------------------------------  
#> CV = 15.15 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.01312046   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 49.27082  
#> 2 PCLs 50.42017  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 52.18604  
#> 2 0.2 50.32869  
#> 3 0.4 49.49482  
#> 4 0.8 47.37244  
#> ------------------------------------------------------------------------



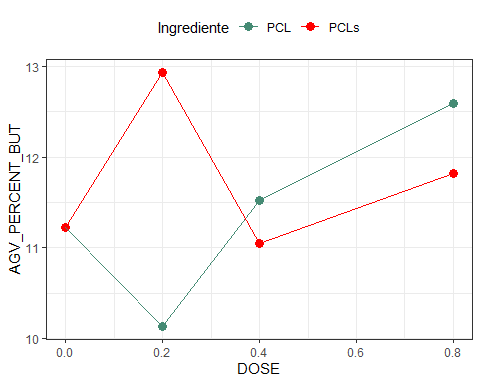
#>   
#> [1] "===================================="  
#> [1] "AGV\_PERCENT\_PROP"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.86 4 0.04252 0.83740  
#> Ingred. 1 0.03 2 0.00151 0.96915  
#> Dose 3 67.36 6 1.11638 0.35039  
#> Ingred.\*Dose 3 1.49 3 0.02464 0.99471  
#> Residuo 55 1106.17 5   
#> Total 63 1175.90 1   
#> ------------------------------------------------------------------------  
#> CV = 22.81 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.1765802   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 19.64079  
#> 2 PCLs 19.68434  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 18.41768  
#> 2 0.2 19.91386  
#> 3 0.4 19.13382  
#> 4 0.8 21.18488  
#> ------------------------------------------------------------------------



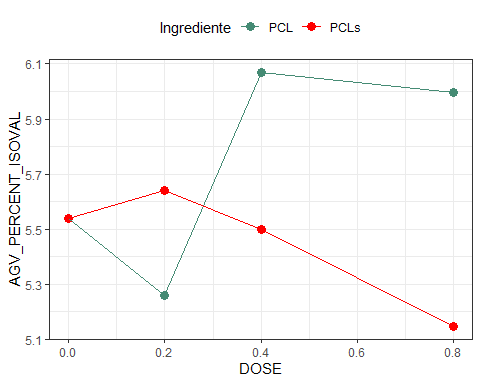
#>   
#> [1] "===================================="  
#> [1] "AGV\_PERCENT\_ISOBUT"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.358 2 0.0971 0.75648  
#> Ingred. 1 12.113 4 3.2848 0.07538  
#> Dose 3 8.514 5 0.7696 0.51598  
#> Ingred.\*Dose 3 5.205 3 0.4705 0.70406  
#> Residuo 55 202.818 6   
#> Total 63 229.008 1   
#> ------------------------------------------------------------------------  
#> CV = 34.05 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 9.155432e-05   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 6.074957  
#> 2 PCLs 5.204865  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 5.134373  
#> 2 0.2 5.451575  
#> 3 0.4 6.000126  
#> 4 0.8 5.973568  
#> ------------------------------------------------------------------------



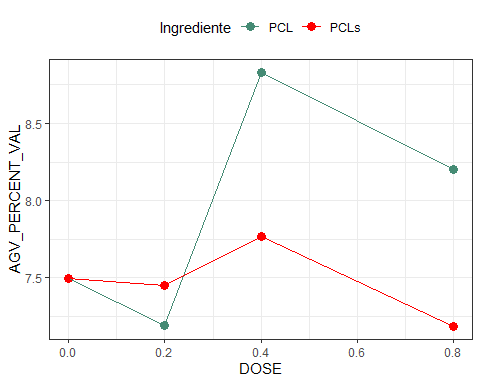
#>   
#> [1] "===================================="  
#> [1] "AGV\_PERCENT\_BUT"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 3.71 5 0.40291 0.52822  
#> Ingred. 1 2.47 3 0.26762 0.60701  
#> Dose 3 9.68 4 0.35023 0.78912  
#> Ingred.\*Dose 3 32.28 2 1.16802 0.33029  
#> Residuo 55 506.70 6   
#> Total 63 554.84 1   
#> ------------------------------------------------------------------------  
#> CV = 26.25 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.245189   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 11.36646  
#> 2 PCLs 11.75901  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 11.22451  
#> 2 0.2 11.53425  
#> 3 0.4 11.28644  
#> 4 0.8 12.20573  
#> ------------------------------------------------------------------------



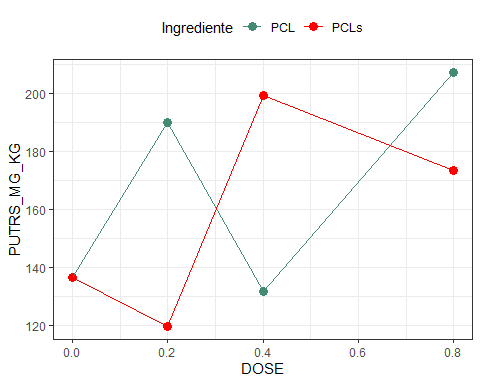
#>   
#> [1] "===================================="  
#> [1] "AGV\_PERCENT\_ISOVAL"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 4.684 6 1.50111 0.22572  
#> Ingred. 1 1.080 3 0.34628 0.55864  
#> Dose 3 0.959 2 0.10246 0.95827  
#> Ingred.\*Dose 3 3.689 4 0.39415 0.75770  
#> Residuo 55 171.612 5   
#> Total 63 182.025 1   
#> ------------------------------------------------------------------------  
#> CV = 31.62 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.01176899   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 5.716085  
#> 2 PCLs 5.456221  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 5.539711  
#> 2 0.2 5.450363  
#> 3 0.4 5.783903  
#> 4 0.8 5.570636  
#> ------------------------------------------------------------------------



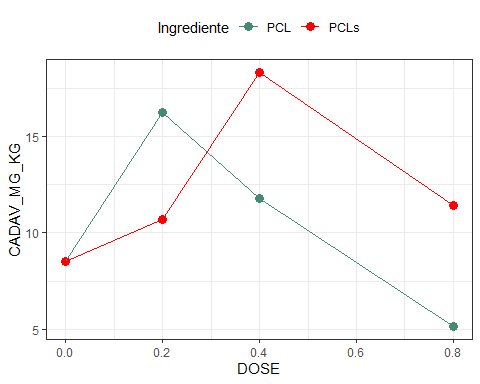
#>   
#> [1] "===================================="  
#> [1] "AGV\_PERCENT\_VAL"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.014 2 0.00429 0.94802  
#> Ingred. 1 3.320 5 0.98287 0.32583  
#> Dose 3 8.727 4 0.86135 0.46670  
#> Ingred.\*Dose 3 5.635 3 0.55616 0.64621  
#> Residuo 55 185.756 6   
#> Total 63 203.452 1   
#> ------------------------------------------------------------------------  
#> CV = 23.86 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.3564064   
#> De acordo com o teste de Shapiro-Wilk a 5% de significancia, os residuos podem ser considerados normais.  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 7.930890  
#> 2 PCLs 7.475402  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 7.497679  
#> 2 0.2 7.321266  
#> 3 0.4 8.300892  
#> 4 0.8 7.692746  
#> ------------------------------------------------------------------------



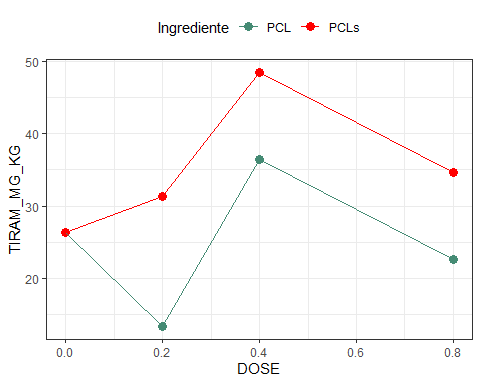
#>   
#> [1] "===================================="  
#> [1] "PUTRS\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 3425 4 0.50213 0.48156  
#> Ingred. 1 1357 2 0.19903 0.65726  
#> Dose 3 24325 6 1.18883 0.32250  
#> Ingred.\*Dose 3 41299 3 2.01838 0.12198  
#> Residuo 55 375124 5   
#> Total 63 445530 1   
#> ------------------------------------------------------------------------  
#> CV = 51.06 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.008383864   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 166.3566  
#> 2 PCLs 157.1456  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 136.4613  
#> 2 0.2 154.7106  
#> 3 0.4 165.4956  
#> 4 0.8 190.3369  
#> ------------------------------------------------------------------------



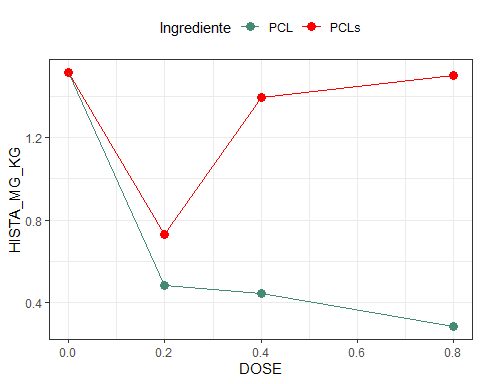
#>   
#> [1] "===================================="  
#> [1] "CADAV\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 4098.7 5 18.4427 0.00007  
#> Ingred. 1 52.8 6 0.2377 0.62778  
#> Dose 3 572.4 3 0.8585 0.46815  
#> Ingred.\*Dose 3 401.3 2 0.6020 0.61649  
#> Residuo 55 12223.2 4   
#> Total 63 17348.5 1   
#> ------------------------------------------------------------------------  
#> CV = 131.52 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.0004615235   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 10.42625  
#> 2 PCLs 12.24344  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 8.53125  
#> 2 0.2 13.48875  
#> 3 0.4 15.05562  
#> 4 0.8 8.26375  
#> ------------------------------------------------------------------------



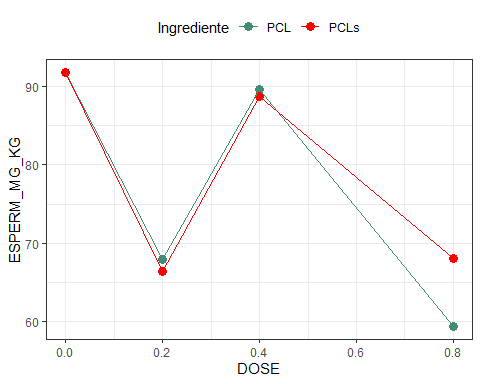
#>   
#> [1] "===================================="  
#> [1] "TIRAM\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 7829 5 8.0166 0.00646  
#> Ingred. 1 1765 3 1.8069 0.18440  
#> Dose 3 3653 2 1.2467 0.30171  
#> Ingred.\*Dose 3 685 4 0.2336 0.87256  
#> Residuo 55 53716 6   
#> Total 63 67647 1   
#> ------------------------------------------------------------------------  
#> CV = 104.33 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 1.859049e-05   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 24.70312  
#> 2 PCLs 35.20531  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 26.35000  
#> 2 0.2 22.38063  
#> 3 0.4 42.45250  
#> 4 0.8 28.63375  
#> ------------------------------------------------------------------------



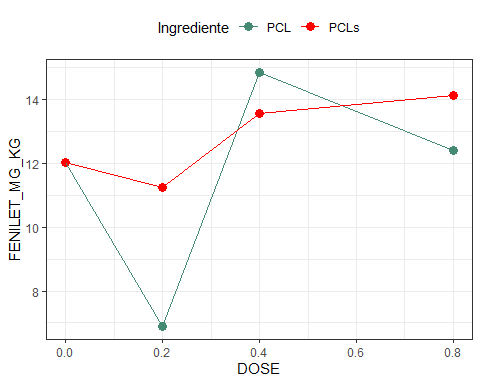
#>   
#> [1] "===================================="  
#> [1] "HISTA\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 46.717 5 17.8288 0.00009  
#> Ingred. 1 5.844 6 2.2304 0.14104  
#> Dose 3 7.023 3 0.8934 0.45046  
#> Ingred.\*Dose 3 3.959 2 0.5036 0.68137  
#> Residuo 55 144.117 4   
#> Total 63 207.661 1   
#> ------------------------------------------------------------------------  
#> CV = 164.44 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 3.784456e-05   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 0.6821875  
#> 2 PCLs 1.2865625  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 1.51750  
#> 2 0.2 0.60750  
#> 3 0.4 0.92125  
#> 4 0.8 0.89125  
#> ------------------------------------------------------------------------



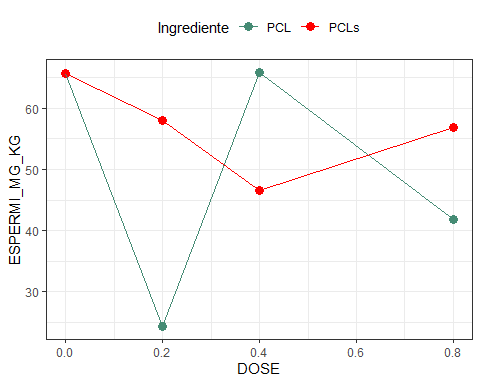
#>   
#> [1] "===================================="  
#> [1] "ESPERM\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 9863 6 6.6132 0.01286  
#> Ingred. 1 39 4 0.0259 0.87281  
#> Dose 3 10182 3 2.2758 0.08993  
#> Ingred.\*Dose 3 276 5 0.0616 0.97979  
#> Residuo 55 82026 2   
#> Total 63 102385 1   
#> ------------------------------------------------------------------------  
#> CV = 49.54 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 9.68163e-08   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 77.17281  
#> 2 PCLs 78.72563  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 91.81375  
#> 2 0.2 67.18625  
#> 3 0.4 89.11687  
#> 4 0.8 63.68000  
#> ------------------------------------------------------------------------



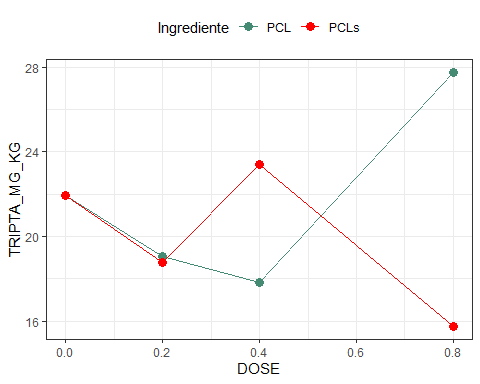
#>   
#> [1] "===================================="  
#> [1] "FENILET\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 25.6 4 0.30082 0.58559  
#> Ingred. 1 23.1 2 0.27157 0.60437  
#> Dose 3 240.2 5 0.93930 0.42800  
#> Ingred.\*Dose 3 72.0 3 0.28168 0.83840  
#> Residuo 55 4688.1 6   
#> Total 63 5049.1 1   
#> ------------------------------------------------------------------------  
#> CV = 76.01 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.001120371   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 11.54531  
#> 2 PCLs 12.74812  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 12.03375  
#> 2 0.2 9.06875  
#> 3 0.4 14.20813  
#> 4 0.8 13.27625  
#> ------------------------------------------------------------------------



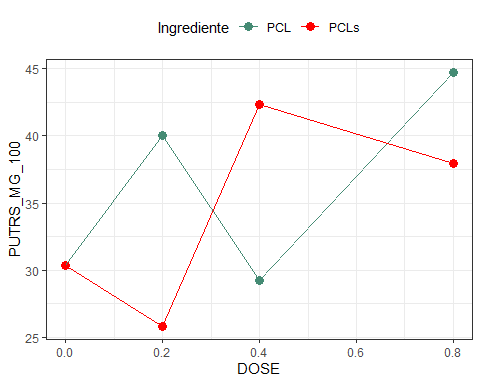
#>   
#> [1] "===================================="  
#> [1] "ESPERMI\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 5926 5 1.51272 0.22396  
#> Ingred. 1 865 6 0.22078 0.64030  
#> Dose 3 5175 2 0.44034 0.72506  
#> Ingred.\*Dose 3 6098 3 0.51889 0.67104  
#> Residuo 55 215471 4   
#> Total 63 233536 1   
#> ------------------------------------------------------------------------  
#> CV = 117.9 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 9.163349e-07   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 49.41156  
#> 2 PCLs 56.76406  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 65.64250  
#> 2 0.2 41.15563  
#> 3 0.4 56.18750  
#> 4 0.8 49.36563  
#> ------------------------------------------------------------------------



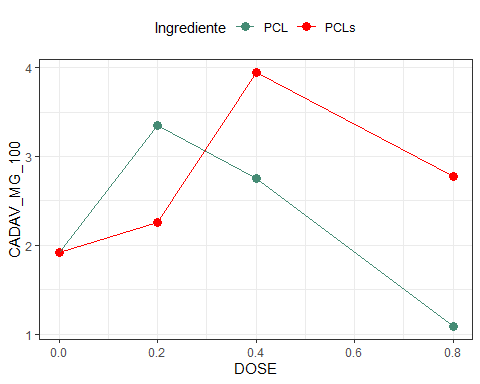
#>   
#> [1] "===================================="  
#> [1] "TRIPTA\_MG\_KG"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 225.2 4 1.21010 0.27610  
#> Ingred. 1 45.5 6 0.24444 0.62299  
#> Dose 3 92.5 5 0.16569 0.91905  
#> Ingred.\*Dose 3 654.2 3 1.17171 0.32890  
#> Residuo 55 10236.7 2   
#> Total 63 11254.2 1   
#> ------------------------------------------------------------------------  
#> CV = 65.58 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.04206225   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 21.64562  
#> 2 PCLs 19.95938  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 21.93500  
#> 2 0.2 18.91437  
#> 3 0.4 20.61062  
#> 4 0.8 21.75000  
#> ------------------------------------------------------------------------



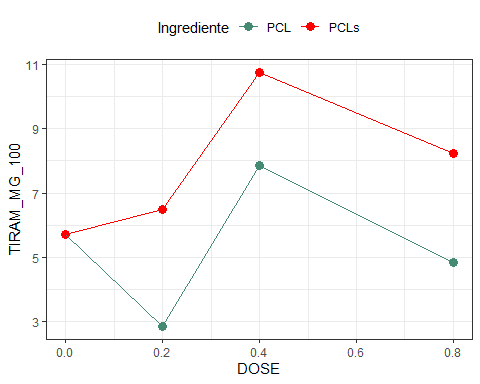
#>   
#> [1] "===================================="  
#> [1] "PUTRS\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 12.5 2 0.03759 0.84699  
#> Ingred. 1 62.1 6 0.18722 0.66694  
#> Dose 3 1065.1 4 1.07056 0.36915  
#> Ingred.\*Dose 3 1616.8 5 1.62501 0.19408  
#> Residuo 55 18240.3 3   
#> Total 63 20996.8 1   
#> ------------------------------------------------------------------------  
#> CV = 51.88 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.02277769   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 36.08751  
#> 2 PCLs 34.11760  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 30.36561  
#> 2 0.2 32.91497  
#> 3 0.4 35.79247  
#> 4 0.8 41.33718  
#> ------------------------------------------------------------------------



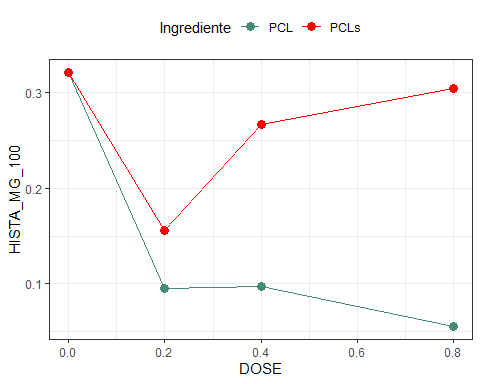
#>   
#> [1] "===================================="  
#> [1] "CADAV\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 211.26 3 19.4462 0.00005  
#> Ingred. 1 3.20 4 0.2950 0.58924  
#> Dose 3 23.45 6 0.7196 0.54456  
#> Ingred.\*Dose 3 18.65 5 0.5723 0.63562  
#> Residuo 55 597.52 2   
#> Total 63 854.09 1   
#> ------------------------------------------------------------------------  
#> CV = 131.82 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.0006661676   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 2.276643  
#> 2 PCLs 2.724186  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 1.925832  
#> 2 0.2 2.798636  
#> 3 0.4 3.348705  
#> 4 0.8 1.928483  
#> ------------------------------------------------------------------------



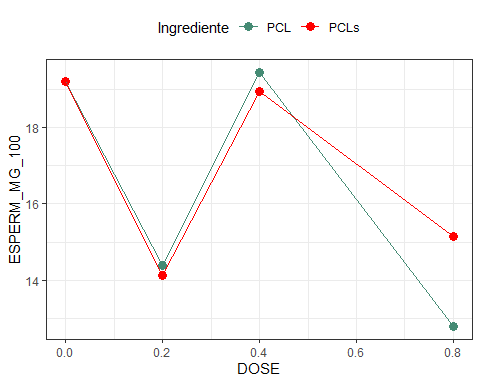
#>   
#> [1] "===================================="  
#> [1] "TIRAM\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 435.2 3 9.2160 0.00366  
#> Ingred. 1 98.2 6 2.0805 0.15486  
#> Dose 3 189.1 5 1.3345 0.27256  
#> Ingred.\*Dose 3 34.0 2 0.2398 0.86821  
#> Residuo 55 2597.2 4   
#> Total 63 3353.7 1   
#> ------------------------------------------------------------------------  
#> CV = 104.68 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 4.992046e-05   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 5.325669  
#> 2 PCLs 7.803654  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 5.729433  
#> 2 0.2 4.677999  
#> 3 0.4 9.313891  
#> 4 0.8 6.537323  
#> ------------------------------------------------------------------------



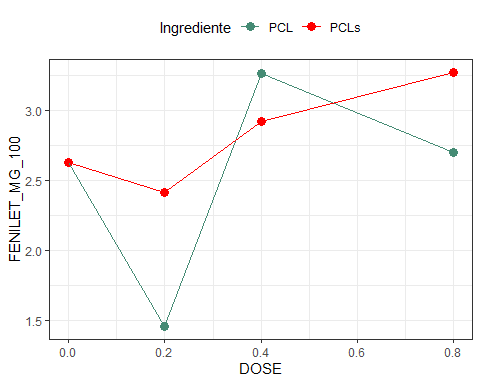
#>   
#> [1] "===================================="  
#> [1] "HISTA\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 1.9818 6 18.9600 0.00006  
#> Ingred. 1 0.2302 5 2.2023 0.14352  
#> Dose 3 0.3366 4 1.0734 0.36796  
#> Ingred.\*Dose 3 0.1489 2 0.4749 0.70102  
#> Residuo 55 5.7490 3   
#> Total 63 8.4465 1   
#> ------------------------------------------------------------------------  
#> CV = 159.96 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.0002372944   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 0.1421450  
#> 2 PCLs 0.2620915  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 0.3214888  
#> 2 0.2 0.1254848  
#> 3 0.4 0.1817946  
#> 4 0.8 0.1797048  
#> ------------------------------------------------------------------------



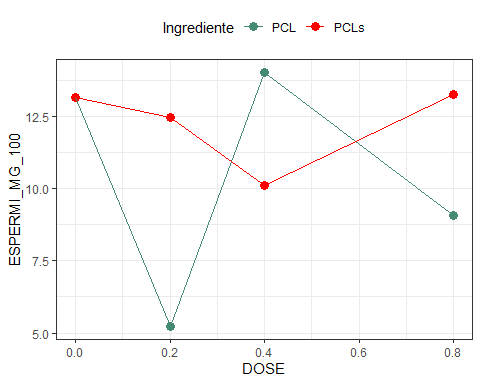
#>   
#> [1] "===================================="  
#> [1] "ESPERM\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 266.6 4 4.4246 0.04001  
#> Ingred. 1 2.6 3 0.0424 0.83761  
#> Dose 3 413.1 2 2.2856 0.08889  
#> Ingred.\*Dose 3 21.2 6 0.1172 0.94966  
#> Residuo 55 3313.6 5   
#> Total 63 4017.0 1   
#> ------------------------------------------------------------------------  
#> CV = 46.61 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 4.284599e-07   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 16.45304  
#> 2 PCLs 16.85263  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 19.19786  
#> 2 0.2 14.25698  
#> 3 0.4 19.18507  
#> 4 0.8 13.97141  
#> ------------------------------------------------------------------------



#>   
#> [1] "===================================="  
#> [1] "FENILET\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 0.122 2 0.02741 0.86911  
#> Ingred. 1 1.390 4 0.31194 0.57876  
#> Dose 3 13.130 5 0.98253 0.40776  
#> Ingred.\*Dose 3 4.028 3 0.30141 0.82423  
#> Residuo 55 245.005 6   
#> Total 63 263.676 1   
#> ------------------------------------------------------------------------  
#> CV = 79.34 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.001070569   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 2.512893  
#> 2 PCLs 2.807595  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 2.629314  
#> 2 0.2 1.933939  
#> 3 0.4 3.091176  
#> 4 0.8 2.986545  
#> ------------------------------------------------------------------------



#>   
#> [1] "===================================="  
#> [1] "ESPERMI\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 149.6 2 0.90168 0.34649  
#> Ingred. 1 56.1 5 0.33805 0.56333  
#> Dose 3 161.9 4 0.32534 0.80702  
#> Ingred.\*Dose 3 285.0 6 0.57257 0.63545  
#> Residuo 55 9125.6 3   
#> Total 63 9778.2 1   
#> ------------------------------------------------------------------------  
#> CV = 113.94 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 4.462616e-06   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 10.36884  
#> 2 PCLs 12.24115  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 13.151666  
#> 2 0.2 8.830851  
#> 3 0.4 12.061874  
#> 4 0.8 11.175594  
#> ------------------------------------------------------------------------



#>   
#> [1] "===================================="  
#> [1] "TRIPTA\_MG\_100"  
#> [1] "===================================="  
#> ------------------------------------------------------------------------  
#> Legenda:  
#> FATOR 1: Ingred.   
#> FATOR 2: Dose   
#> ------------------------------------------------------------------------  
#>   
#>   
#> Quadro da analise de variancia  
#> ------------------------------------------------------------------------  
#> GL SQ QM Fc Pr>Fc  
#> Bloco 1 3.85 4 0.40771 0.52578  
#> Ingred. 1 1.87 2 0.19780 0.65825  
#> Dose 3 6.00 3 0.21183 0.88779  
#> Ingred.\*Dose 3 29.09 6 1.02631 0.38813  
#> Residuo 55 519.67 5   
#> Total 63 560.48 1   
#> ------------------------------------------------------------------------  
#> CV = 68.52 %  
#>   
#> ------------------------------------------------------------------------  
#> Teste de normalidade dos residuos (Shapiro-Wilk)  
#> valor-p: 0.01225394   
#> ATENCAO: a 5% de significancia, os residuos nao podem ser considerados normais!  
#> ------------------------------------------------------------------------  
#>   
#> Interacao nao significativa: analisando os efeitos simples  
#> ------------------------------------------------------------------------  
#> Ingred.  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 PCL 4.656872  
#> 2 PCLs 4.315104  
#> ------------------------------------------------------------------------  
#> Dose  
#> De acordo com o teste F, as medias desse fator sao estatisticamente iguais.  
#>   
#> ------------------------------------------------------------------------  
#> Niveis Medias  
#> 1 0 4.715460  
#> 2 0.2 4.004468  
#> 3 0.4 4.440274  
#> 4 0.8 4.783750  
#> ------------------------------------------------------------------------

