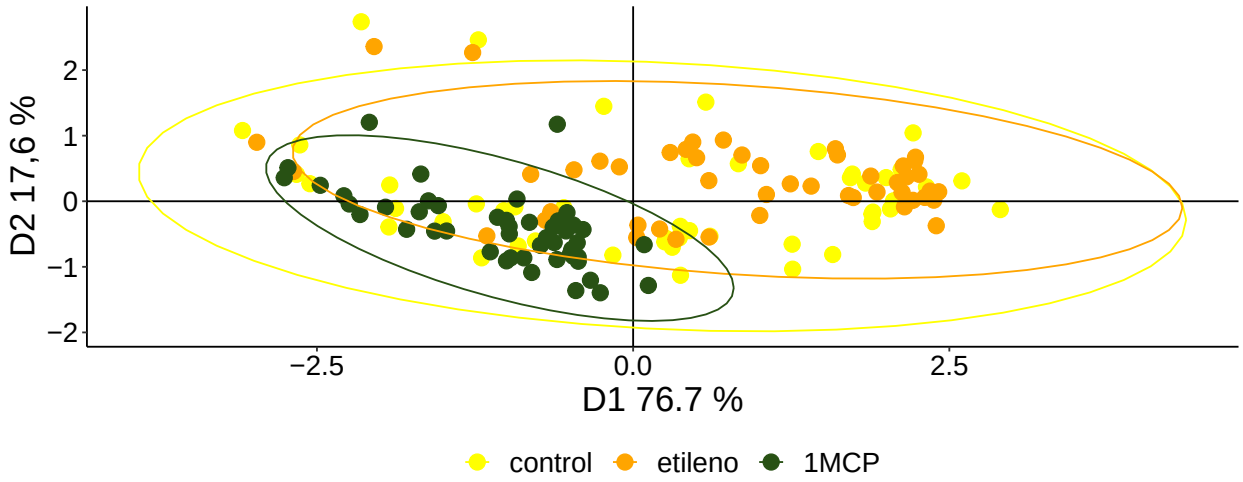
Colorimtric Analysis

Principal component analysis



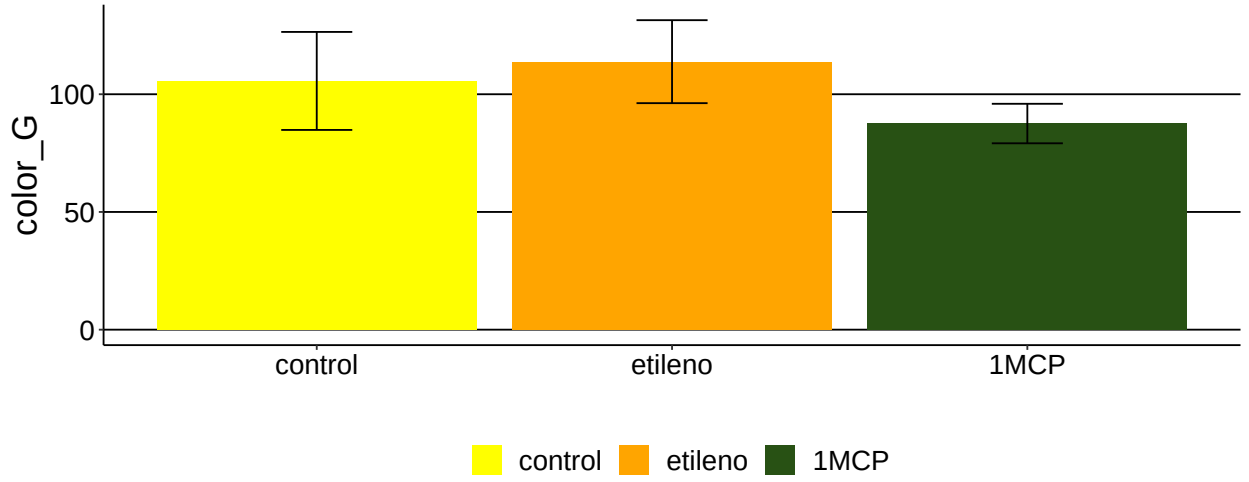
Univariate analysis for the color component Lab

Descriptive table for principal color component

treat	mean	min	max	sd
control	105.65361	65.21946	139.9356	20.813732
etileno	113.83946	66.92551	133.8905	17.623015
1MCP	87.55232	68.07181	102.2095	8.387458

Higher values indicate more advanced stages of maturation

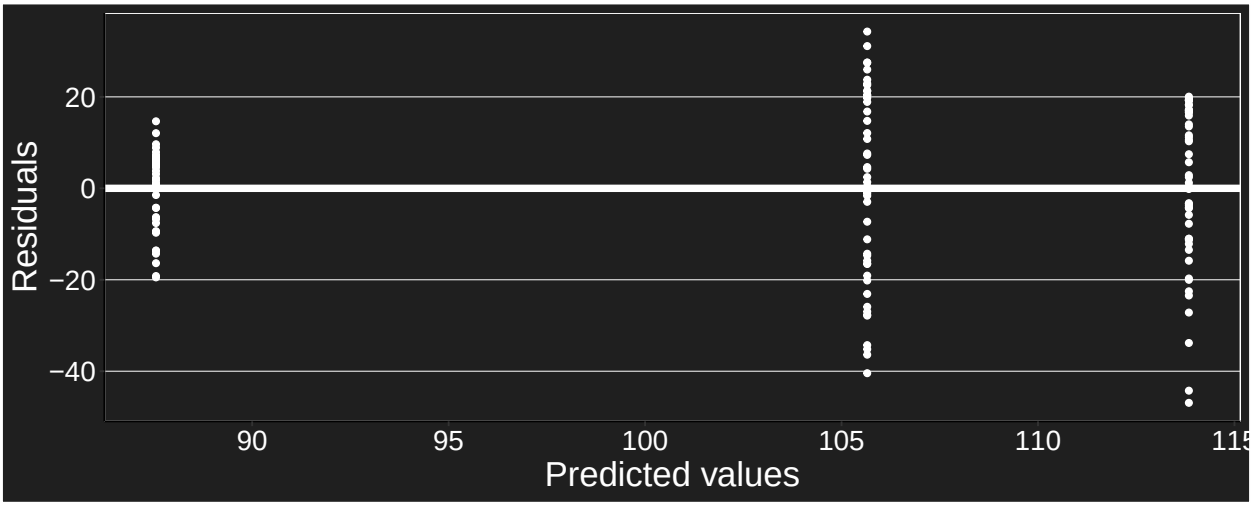
Descriptive graphic (sd)

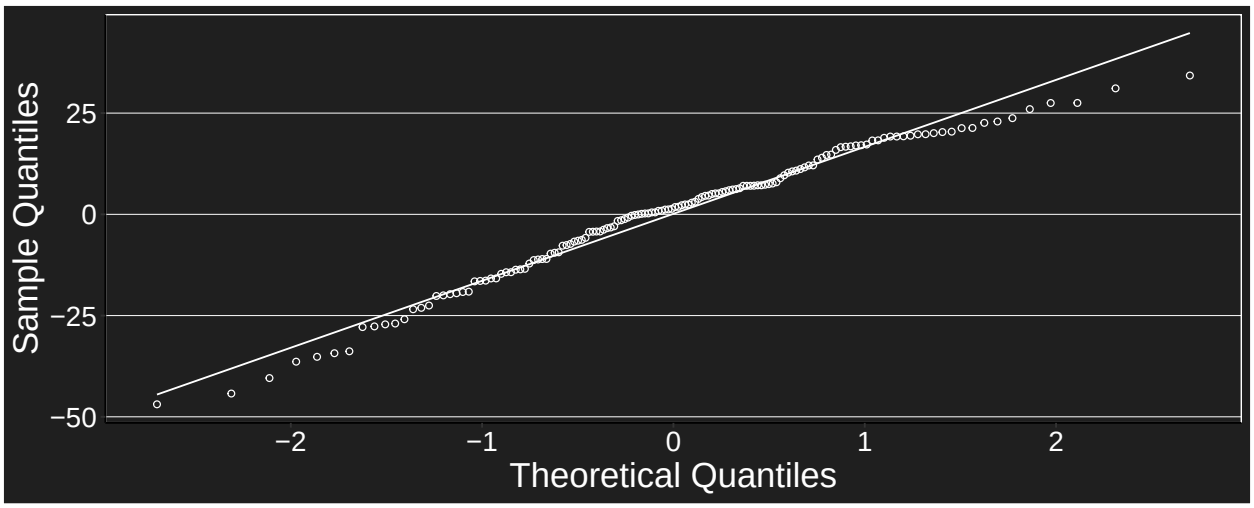


The model

```
## gls(model = (color_G) ~ treat, data = data_color_G, weights = varIdent(form = ~1 |
##     treat))
```

Assumptions check






```
##
##  Shapiro-Wilk normality test
##
## data:  e
## W = 0.97688, p-value = 0.01539
```

Anova (comparison of means)

```
## Denom. DF: 141
##             numDF  F-value p-value
## (Intercept)     1 8365.694  <.0001
## treat           2   52.122  <.0001
```

Dunnett test

```
##
##   Dunnett's test for comparing several treatments with a control :
##     95% family-wise confidence level
##
## $control
##                        diff      lwr.ci    upr.ci   pval
## etileno-control   8.185849   0.6719035  15.69979 0.0303 *
## 1MCP-control    -18.101291 -25.6152362 -10.58735  6e-07 ***
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Tukey test

```
## $emmeans
##  treat   emmean   SE   df lower.CL upper.CL
##  control  105.7 3.00 46.9     99.6      112
##  etileno  113.8 2.54 46.9    108.7      119
##  1MCP      87.6 1.21 47.0     85.1       90
```

```
##
## Degrees-of-freedom method: satterthwaite
## Results are given on the ( (not the response) scale.
## Confidence level used: 0.95
##
## $contrasts
##  contrast          estimate   SE   df t.ratio p.value
##  control - etileno    -8.19 3.94 91.5  -2.080  0.0998
##  control - 1MCP       18.10 3.24 61.8   5.589  <.0001
##  etileno - 1MCP       26.29 2.82 67.1   9.331  <.0001
##
## Note: contrasts are still on the ( scale
## Degrees-of-freedom method: satterthwaite
## P value adjustment: tukey method for comparing a family of 3 estimates
```

Lab coordinates Correlations

a vs. *L*

```
## [1] 0.4863901
```

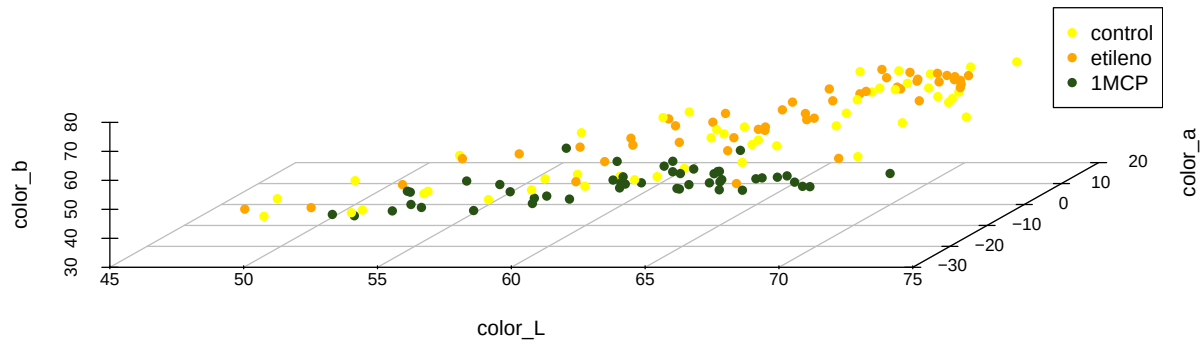
a vs. *b*

```
## [1] 0.6518771
```

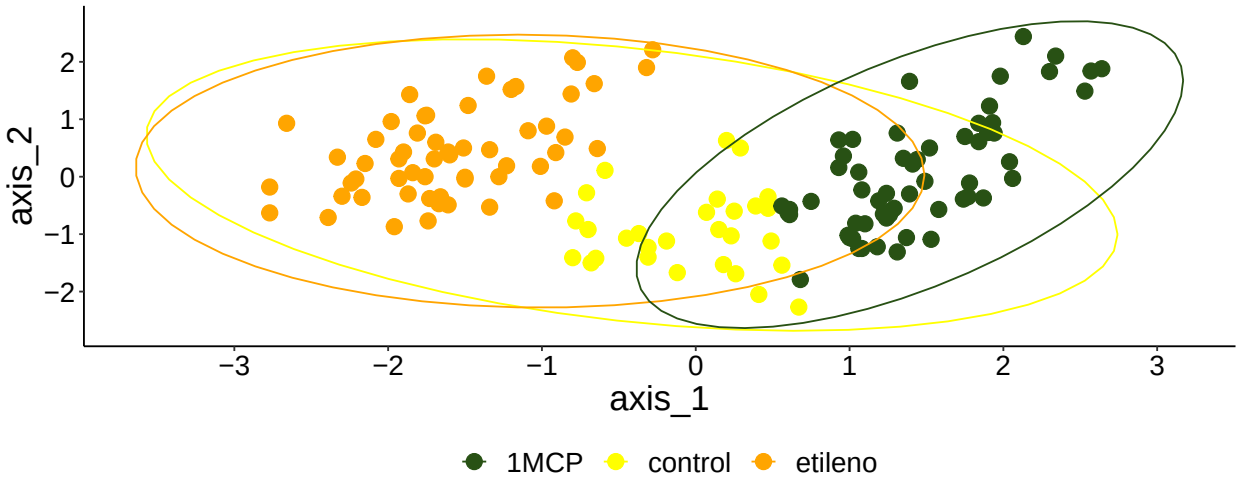
L vs. *b*

```
## [1] 0.796307
```

Color correlation



Discriminant Analysis



Multiple Response Permutation Procedure (MRPP)

```
##
## Call:
## mrpp(dat = datos, grouping = grp, permutations = 999, distance = "bray",      weight.type = 1)
##
## Dissimilarity index: bray
## Weights for groups:  n
##
## Class means and counts:
##
##       1      2      3
## delta 0.1393 0.1047 0.08227
## n     48     48     48
##
## Chance corrected within-group agreement A: 0.1792
## Based on observed delta 0.1088 and expected delta 0.1325
##
## Significance of delta: 0.001
## Permutation: free
## Number of permutations: 999
```