

**Contrastes con R****Cargar los paquetes:**

```
library(mvtnorm)
library(multcomp)
```

Cargar datos de prueba de agricolae

```
library(agricolae)
data(sweetpotato)
```

Ver el orden de los niveles del factor para formar los contrastes

```
levels(sweetpotato$virus)
```

```
[1] "cc" "fc" "ff" "oo"
```

Conociendo el orden,

Se quiere formar los contrastes por ejemplo "oo" vs cada uno de los otros (dunnett)

cc vs oo contraste 1 0 0 -1 por ejemplo.

En R debe ser entonces:

```
contraste <- rbind(c(1,0,0,-1),c(0,1,0,-1),c(0,0,1,-1))
filas<-c("CC vs OO","FC vs OO","FF vs OO")
columnas<-c("CC","FC","FF","OO")
dimnames(contraste)<-list(filas,columnas)
contraste
```

	CC	FC	FF	OO
CC vs OO	1	0	0	-1
FC vs OO	0	1	0	-1
FF vs OO	0	0	1	-1

Para intervalos de confianza

```
compara<-simint(yield~virus, data=sweetpotato, cmatrix=contraste,
type="Dunnett")
summary(compara)
```

Simultaneous Confidence Intervals for General Linear Hypotheses  
Multiple Comparisons of Means: User-defined Contrasts

Fit: lm(formula = yield ~ virus, data = sweetpotato)

Estimated Quantile = 2.8803

Linear Hypotheses:

	Estimate	lwr	upr
CC vs OO == 0	-12.5000	-23.6526	-1.3474
FC vs OO == 0	-24.0333	-35.1859	-12.8808
FF vs OO == 0	-0.5667	-11.7192	10.5859

95% family-wise confidence level

Prueba de hipotesis

```
compara<-simtest(yield~virus, data=sweetpotato, cmatrix=contraste,  
type="Dunnett")  
summary(compara)
```

Simultaneous Tests for General Linear Hypotheses  
Multiple Comparisons of Means: User-defined Contrasts

Fit: lm(formula = yield ~ virus, data = sweetpotato)

Linear Hypotheses:

	Estimate	Std. Error	t value	p value	
CC vs OO == 0	-12.5000	3.8721	-3.228	0.0298	*
FC vs OO == 0	-24.0333	3.8721	-6.207	<0.001	***
FF vs OO == 0	-0.5667	3.8721	-0.146	0.9976	

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
(Adjusted p values reported)

Otra forma que sugiere R.

```
model<- aov(yield~virus, data=sweetpotato)  
compara<-glht(model, linfct = mcp(virus = contraste))  
summary(compara)
```

Simultaneous Tests for General Linear Hypotheses  
Multiple Comparisons of Means: User-defined Contrasts

Fit: aov(formula = yield ~ virus, data = sweetpotato)

Linear Hypotheses:

	Estimate	Std. Error	t value	p value	
CC vs OO == 0	-12.5000	3.8721	-3.228	0.0298	*
FC vs OO == 0	-24.0333	3.8721	-6.207	<0.001	***
FF vs OO == 0	-0.5667	3.8721	-0.146	0.9976	

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
(Adjusted p values reported)