Hordenine cv Solist - Report

Mauro Maver

21/4/2021

Adsorbimento

Langmuir

```
## 
## Formula: Y ~ Q * b * X/(1 + b * X)
## 
## Parameters:
##     Estimate Std. Error t value Pr(>|t|)
## Q 9.5242351  7.6177461    1.25    0.232
## b 0.0008688  0.0007896    1.10    0.290
## 
## Residual standard error: 0.0696 on 14 degrees of freedom
## 
## Algorithm "port", convergence message: relative convergence (4)
```

Sigmoidal Langmuir

```
## 
## Formula: Y ~ Q * b * X/(1 + b * X + s/X)
## 
## Parameters:
##      Estimate Std. Error t value Pr(>|t|)
## Q 10.5441460  9.7792422   1.078    0.301
## b  0.0007712  0.0008029   0.960    0.354
## s -0.5348174  0.6217583  -0.860    0.405
## 
## Residual standard error: 0.0714 on 13 degrees of freedom
## 
## Algorithm "port", convergence message: relative convergence (4)
```

Freundlich

```
## 
## Formula: Y ~ K * (X)^(1/n)
## 
## Parameters:
##    Estimate Std. Error t value Pr(>|t|)
## K   0.01325    0.00372   3.561  0.00313 **
## n   1.13633    0.07250  15.673 2.84e-10 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Residual standard error: 0.06443 on 14 degrees of freedom
## 
## Algorithm "port", convergence message: relative convergence (4)
```

Sips

```
## 
## Formula: Y ~ (Ks * (X)^Bs)/(1 + as * (X)^Bs)
## 
## Parameters:
##    Estimate Std. Error t value Pr(>|t|)
## Ks  0.03638    0.01236   2.943  0.01143 *
## Bs  0.50791    0.13301   3.819  0.00213 **
## as -0.04341    0.04012  -1.082  0.29891
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Residual standard error: 0.05355 on 13 degrees of freedom
## 
## Algorithm "port", convergence message: relative convergence (4)
```

Redlich

```
## 
## Formula: Y ~ Kr * X/(1 + ar * (X)^g)
## 
## Parameters:
##     Estimate Std. Error t value Pr(>|t|)
## Kr  0.004104   0.006192   0.663  0.51908
## g  -0.129146   0.377059  -0.343  0.73744
## ar -0.828002   0.179205  -4.620  0.00048 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## Residual standard error: 0.0657 on 13 degrees of freedom
## 
## Algorithm "port", convergence message: relative convergence (4)
```

Fig 1 - Adsorption isotherms plot

Non-linearized isotherm adsorption models - Hordenine in Quarryfield soil
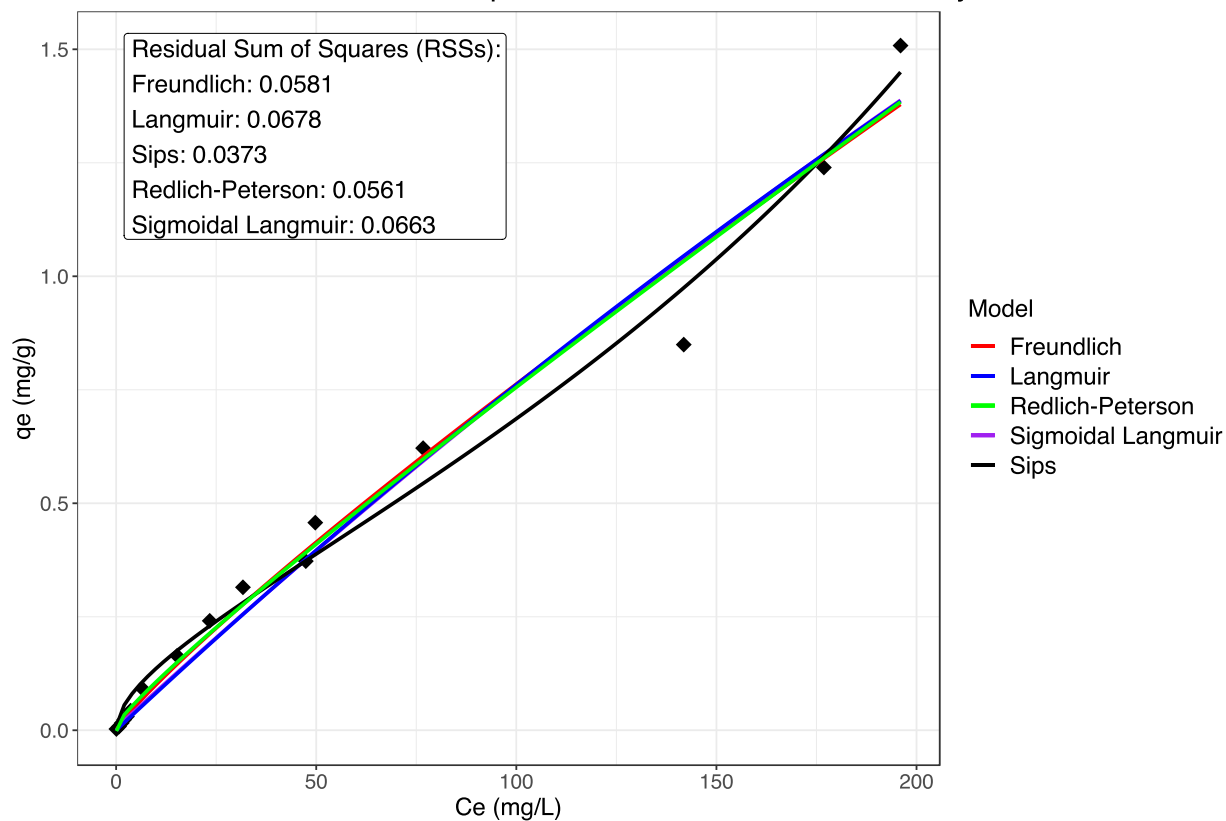
Residual Sum of Squares (RSSs):
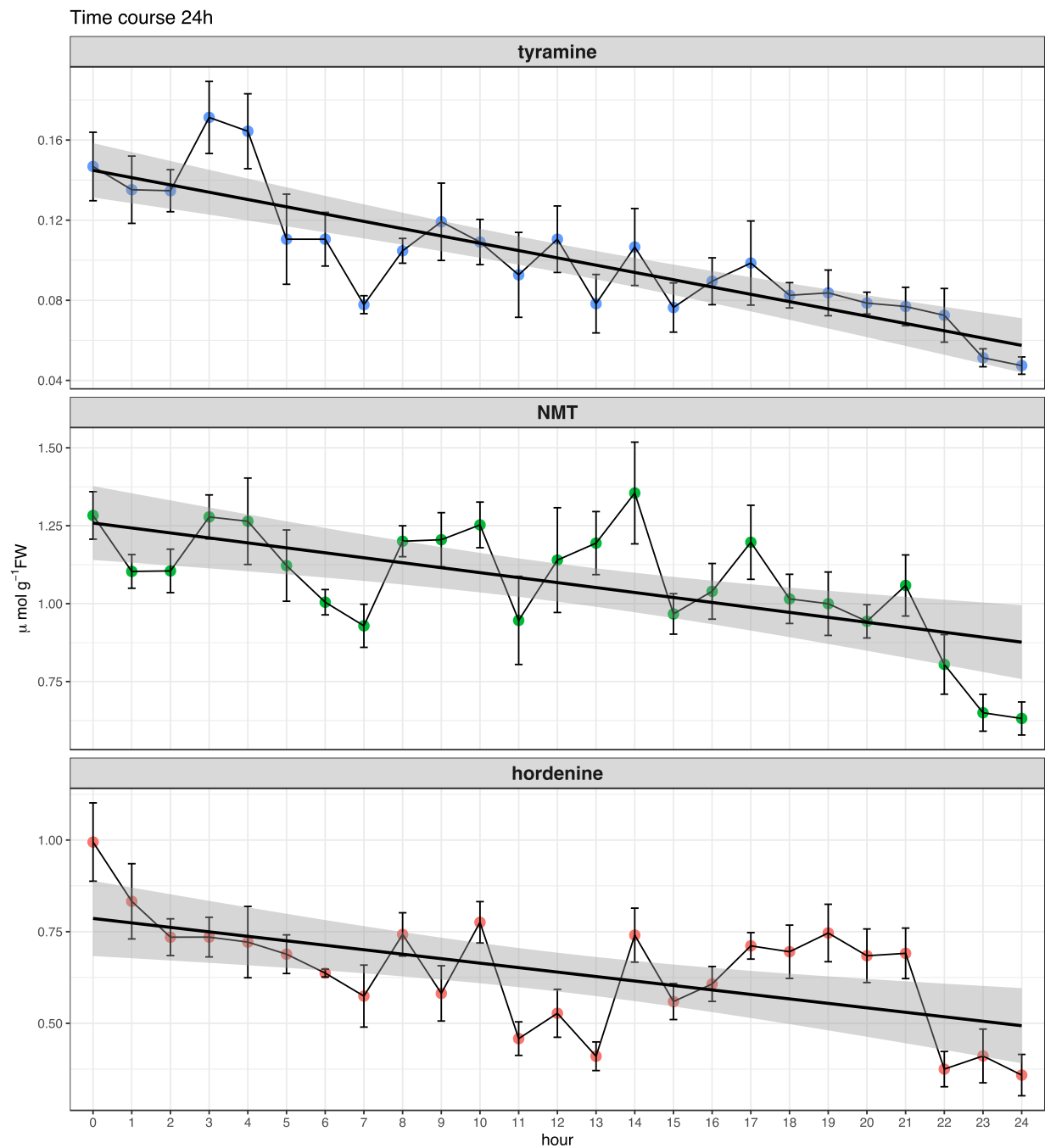Freundlich: 0.0581
Langmuir: 0.0678
Sips: 0.0373
Redlich-Peterson: 0.0561
Sigmoidal Langmuir: 0.0663

Fig 2 - Time Course 24h

Time course 24h

Fig 3 - Time Course 8 days

Time course 8 days

Fig 4 - Time Course in Nutrients Deficiency

Time course Nutrient deficiencies

		Tyramine						**NMT**						**Hordenine**		
	3h	**27h**	**51h**	**75h**			**3h**	**27h**	**51h**	**75h**			**3h**	**27h**	**51h**	**75h**
	P=0.595	P<0.089	P<0.001	P<0.001			P=0.118	P<0.001	P<0.001	P<0.001			P=0.015	P<0.001	P<0.001	P<0.001
C	a	ab	b	b		**C**	ab	bc	b	d		**C**	bc	d	b	c
-Fe	a	b	b	a		**-Fe**	b	c	b	bc		**-Fe**	bc	cd	b	b
-N	a	a	b	a		**-N**	b	a	ab	b		**-N**	c	ab	b	b
-P	a	ab	b	a		**-P**	a	b	a	a		**-P**	a	a	a	a
-S	a	a	a	ab		**-S**	ab	b	a	bc		**-S**	ab	bc	b	c
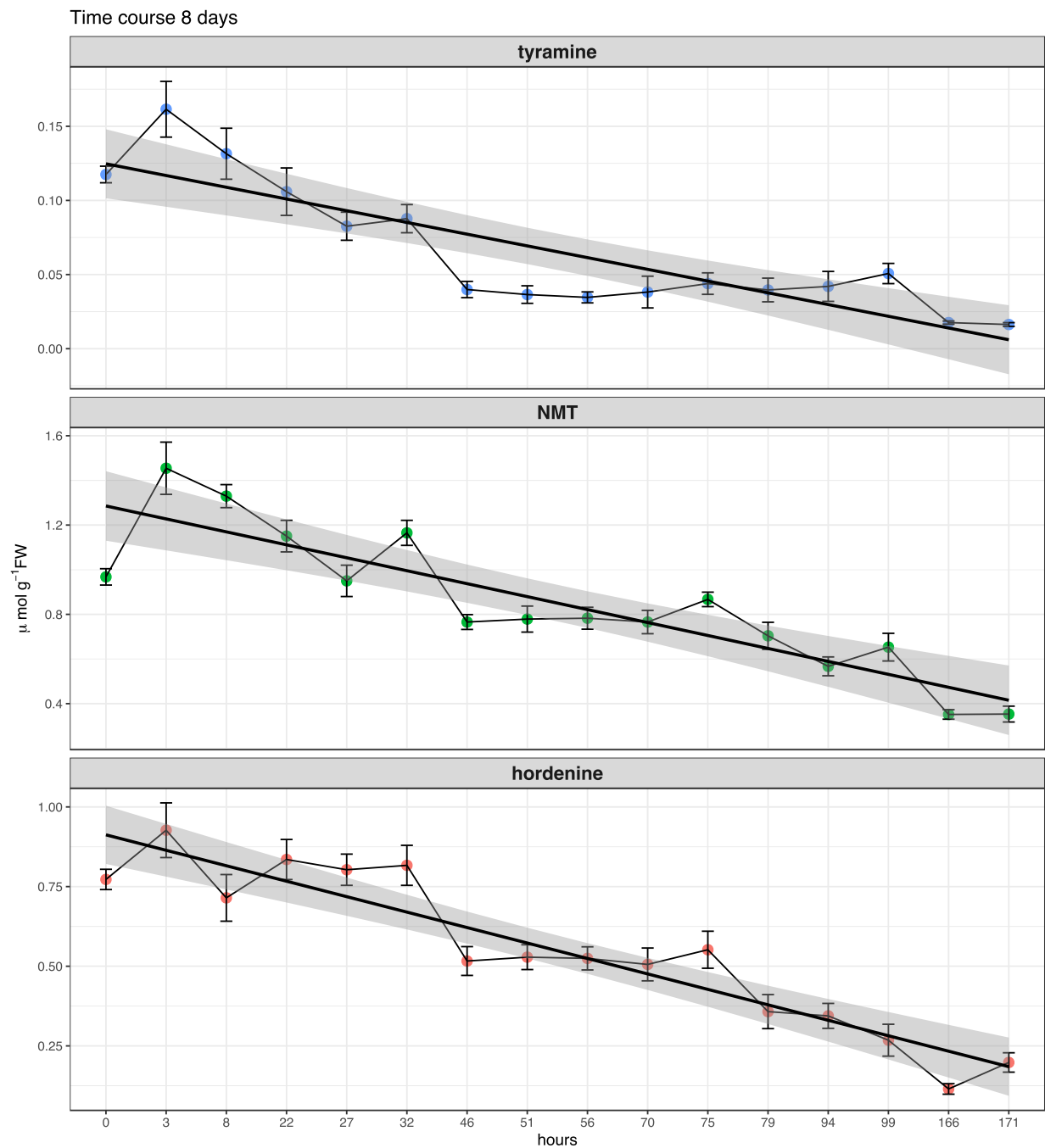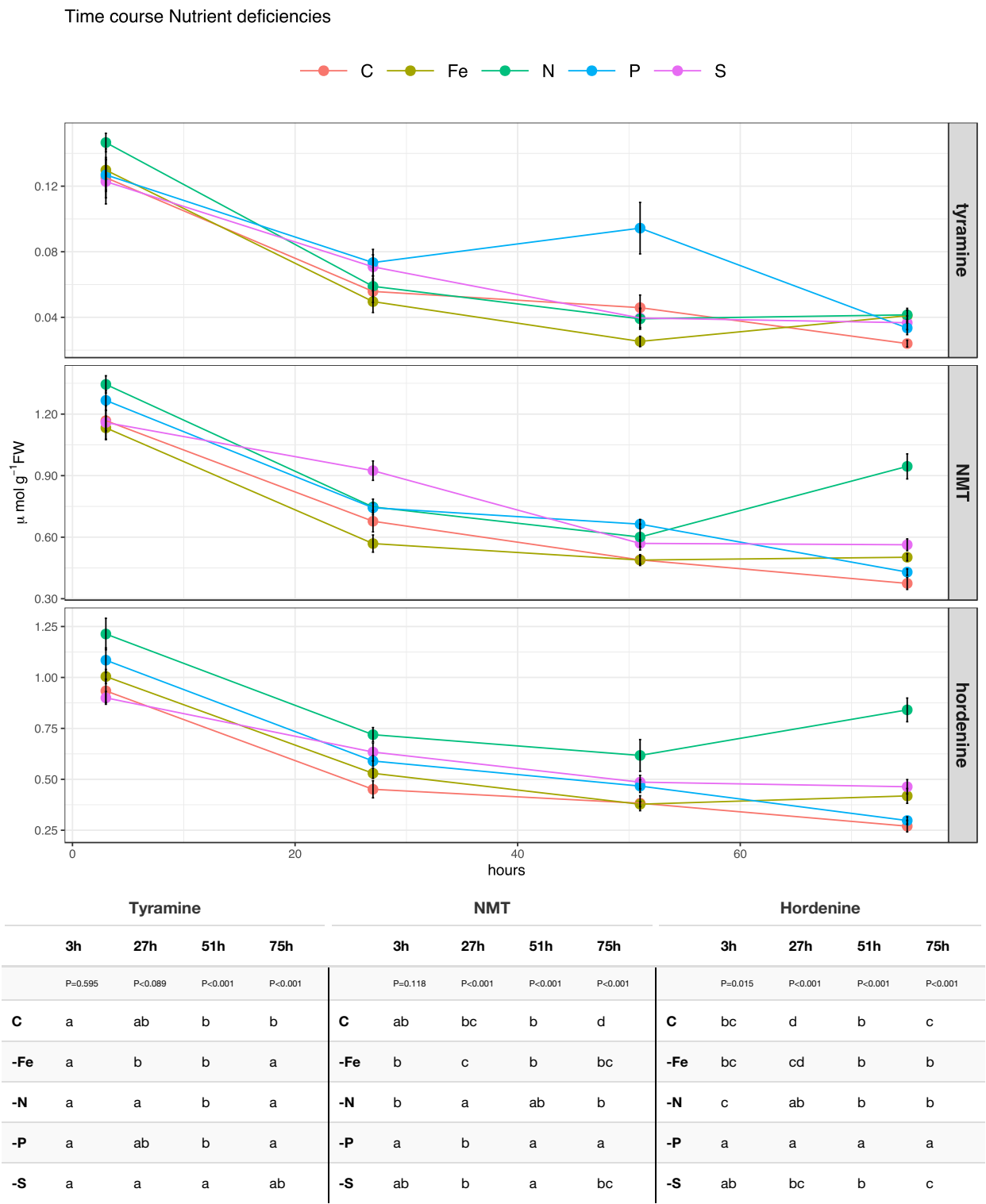
Fig 5 - Targeted metabolomic of Time Course in Nutrients Deficiency

Time course Targeted Metabolomic (Ultimo campionamento TC)
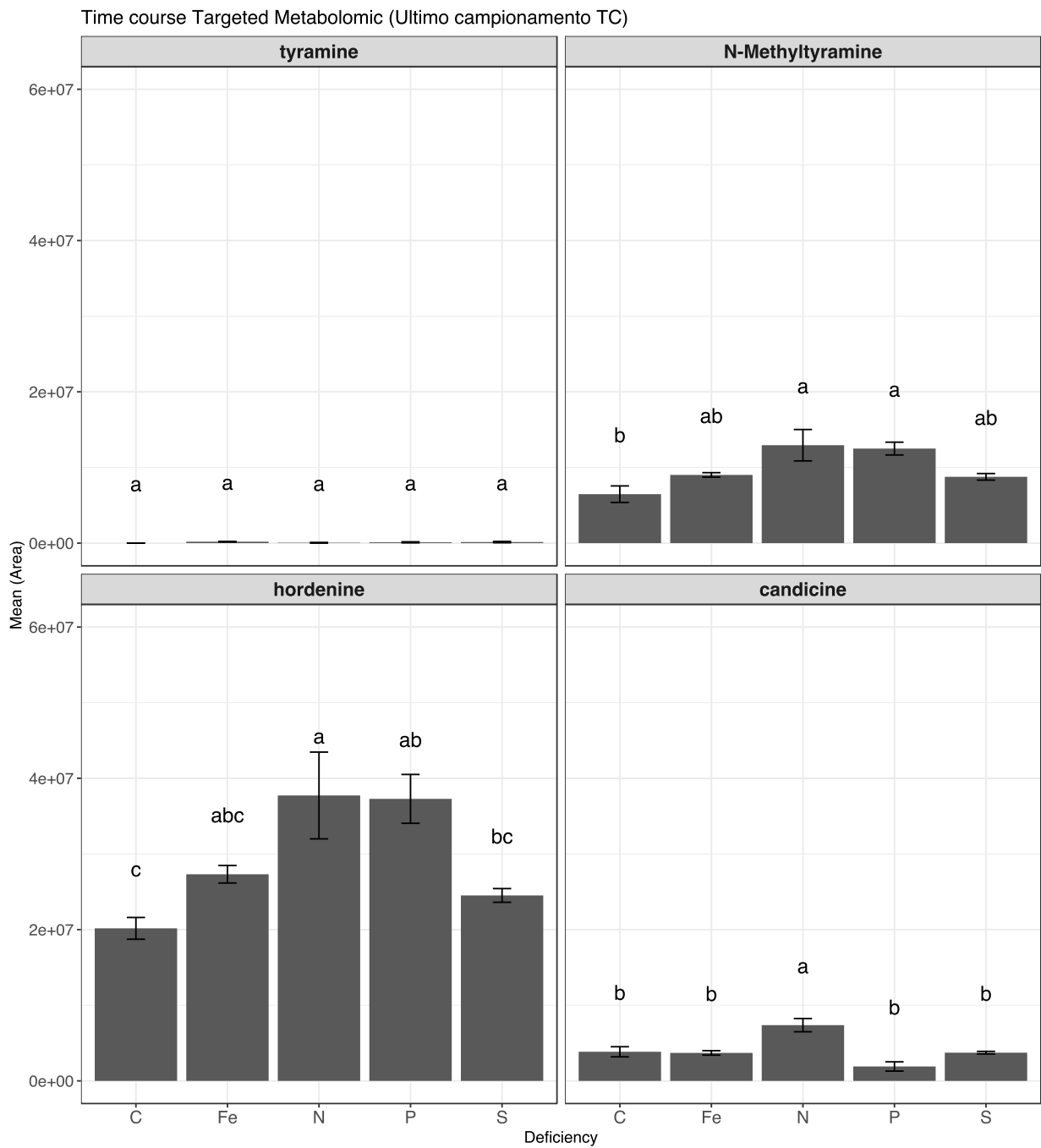
Fig 6 - Untargeted metabolomic (Fold Change Biosynthesis) of Time Course in Nutrients Deficiency

A

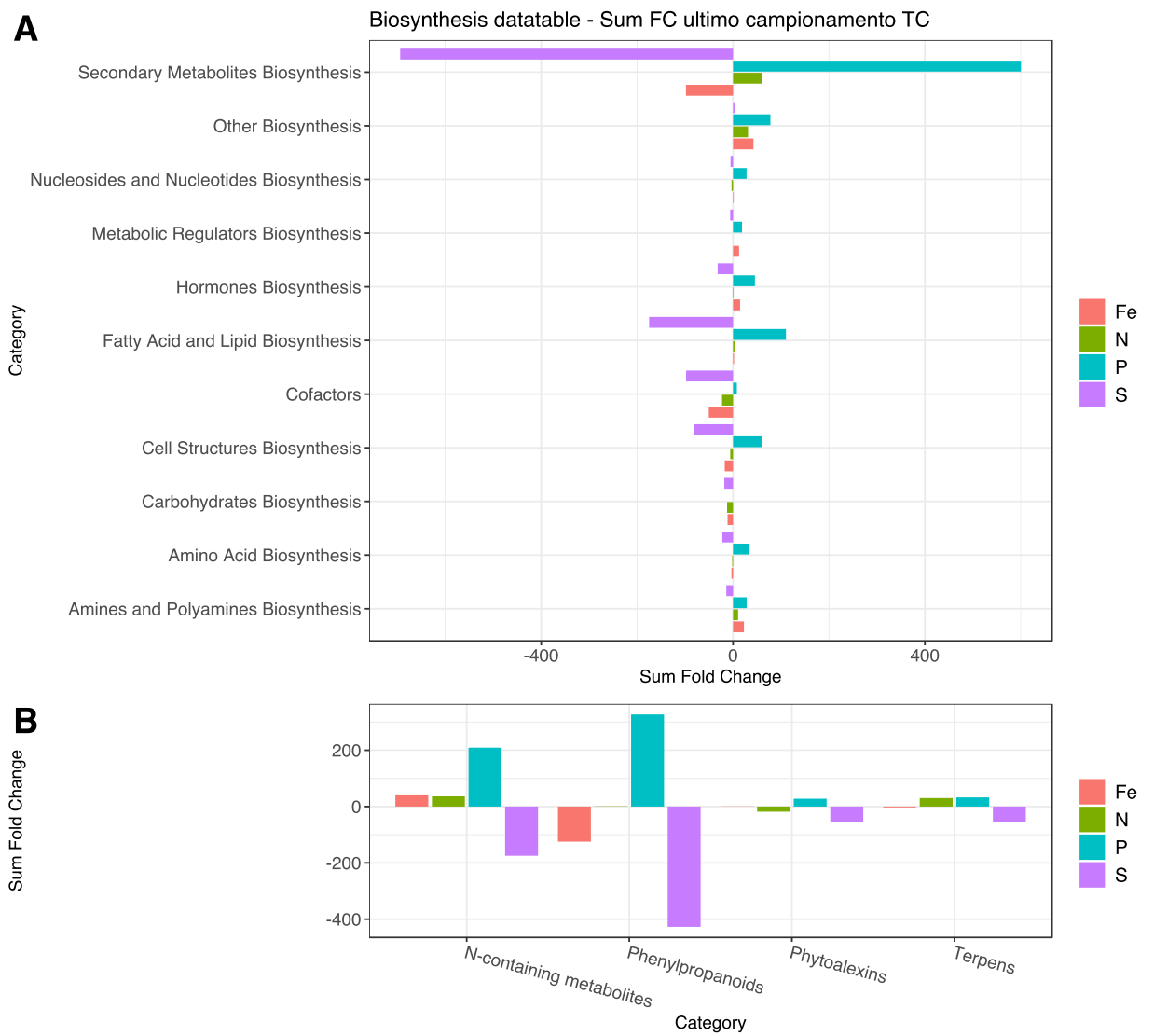Biosynthesis datatable - Sum FC ultimo campionamento TC

B

Table 1 - Root Exudates

Days	Tyramine (nmol g^{-1})	N-methyltyramine (nmol g^{-1})	Hordenine (nmol g^{-1})
0	11.4 (± 0.64)	83.85 (± 8.57)	102.55 (± 10.22)
3	0.11 (± 0.01)	1.38 (± 0.09)	1.23 (± 0.22)