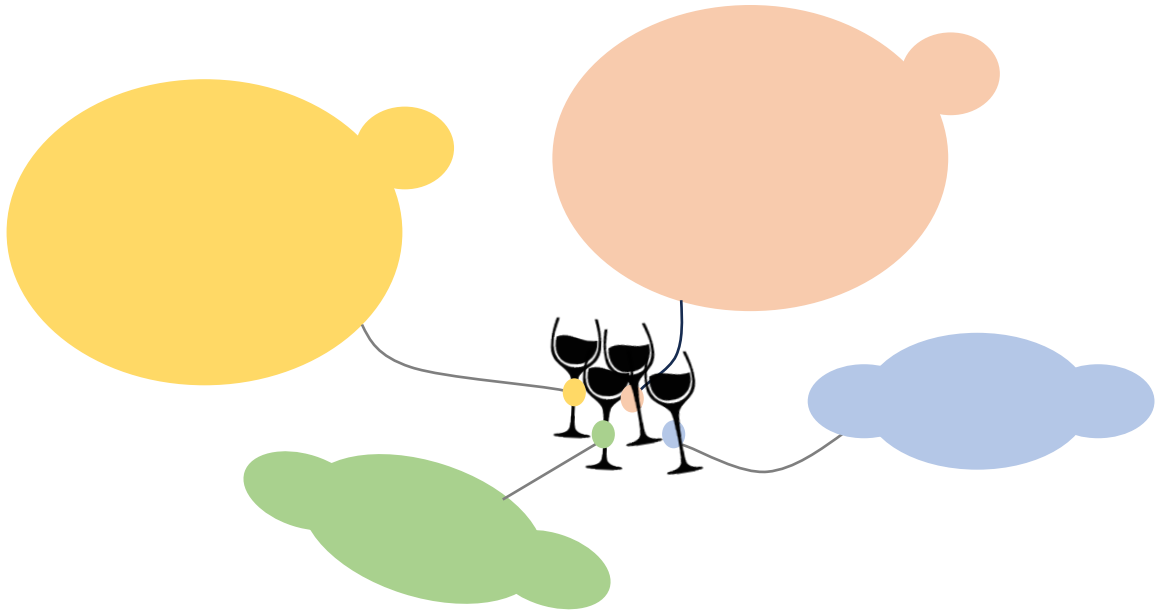


Friendly yeasts for winemaking: flavours involved in yeast interactions mediated by cooperation or competition events

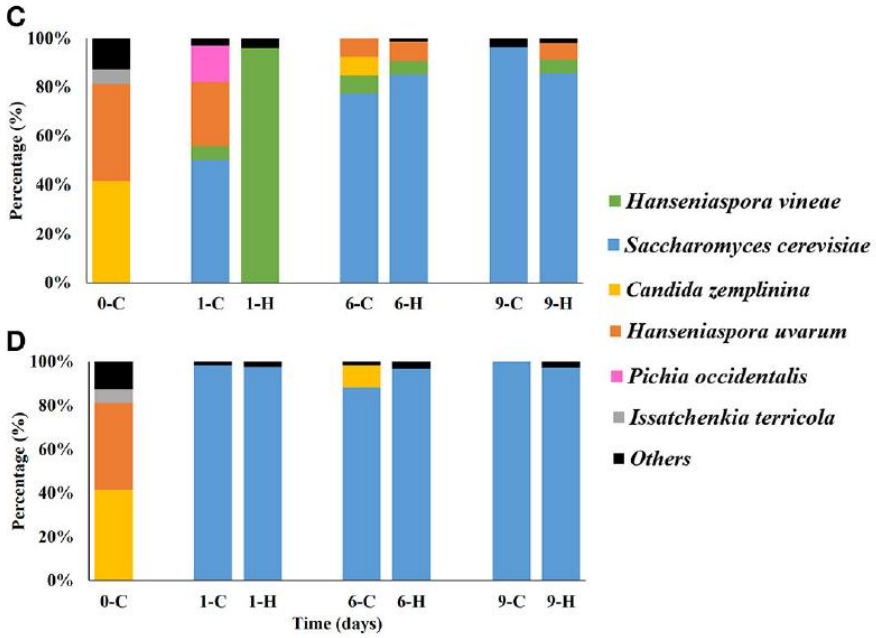
María José Valera, Eduardo Boido, Eduardo Dellacassa, Francisco Carrau

UDELAR FQ FACULTAD DE QUÍMICA
UNIVERSIDAD DE LA REPÚBLICA URUGUAY
Área Enología y Biotecnología de Fermentaciones,
Departamento de Ciencia y Tecnología de los Alimentos,
Facultad de Química, UDELAR.
www.enologia.fq.edu.uy
(+598) 2924 8194
Av. General Flores 2124, CP 11800,
Montevideo, Uruguay

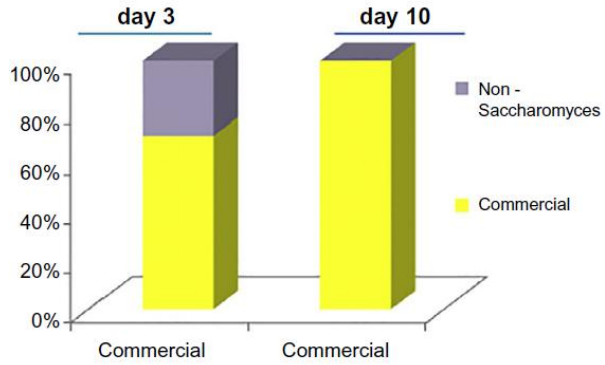
ANII AGENCIA NACIONAL DE INVESTIGACIÓN E INNOVACIÓN

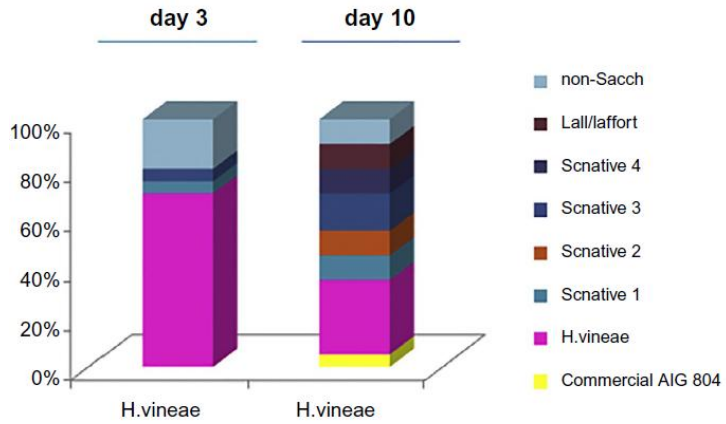
Introduction

Introduction



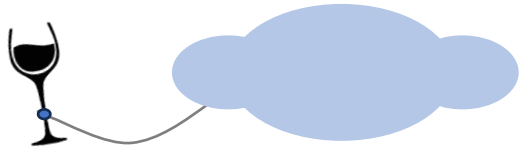
Lleixa et al., 2016





Carrau et al., 2020

¿The aromatic profile of *H. vineae* could be related with its friendly behaviour?



Materials and methods

Fermentation

S.cerevisiae

H.vineae

Synthetic must
200g/L sugars
100 mg/L YAN

Materials and methods

Fermentation

S.cerevisiae

H.vineae

Synthetic must
200g/L sugars
100 mg/L YAN

Aroma quantification

GC-MS analysis throughout the fermentation

Materials and methods

Fermentation

S.cerevisiae

H.vineae

Synthetic must
200g/L sugars
100 mg/L YAN

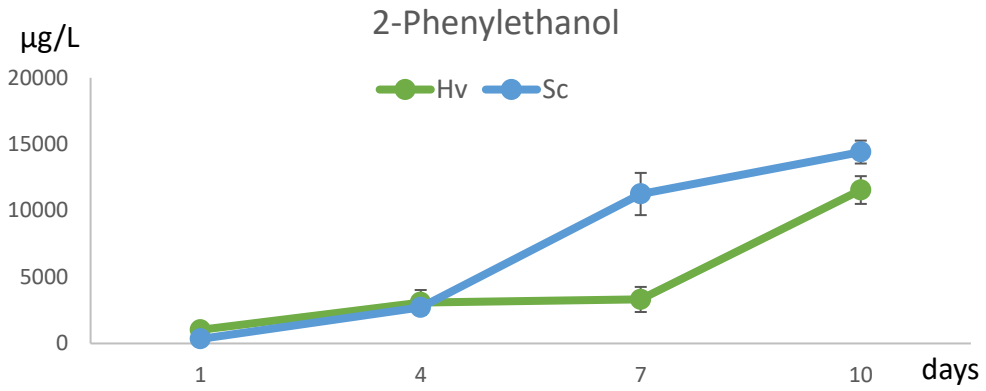
Aroma quantification

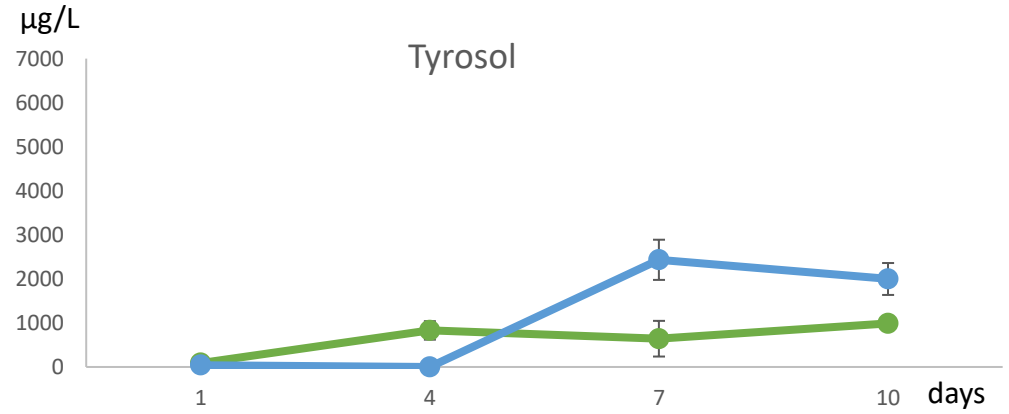
GC-MS analysis throughout the fermentation

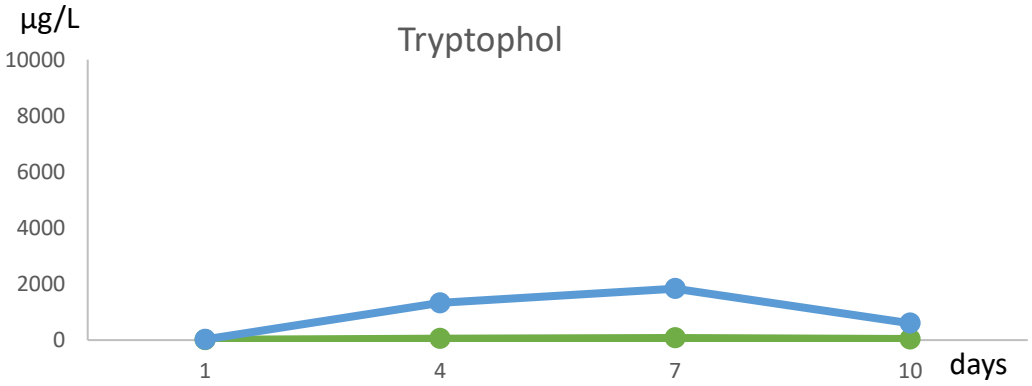
Growth analysis

Addition of pure compounds in synthetic must
A600nm

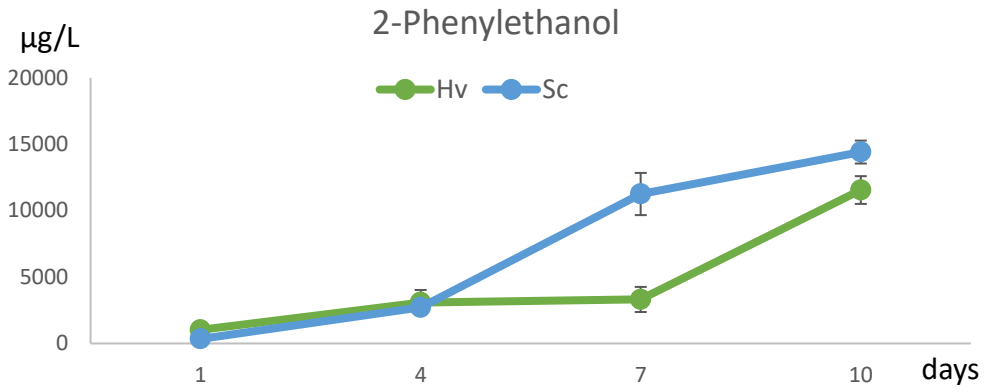
Analysis of higher alcohols from aromatic amino acids and their corresponding acetates

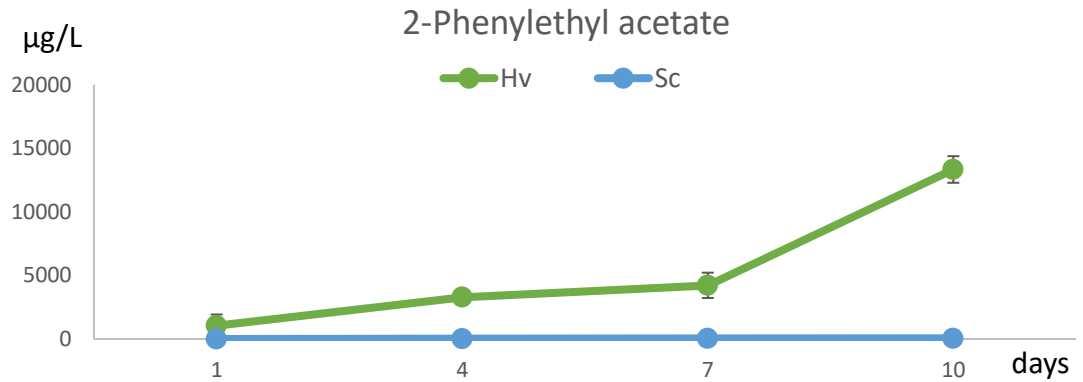


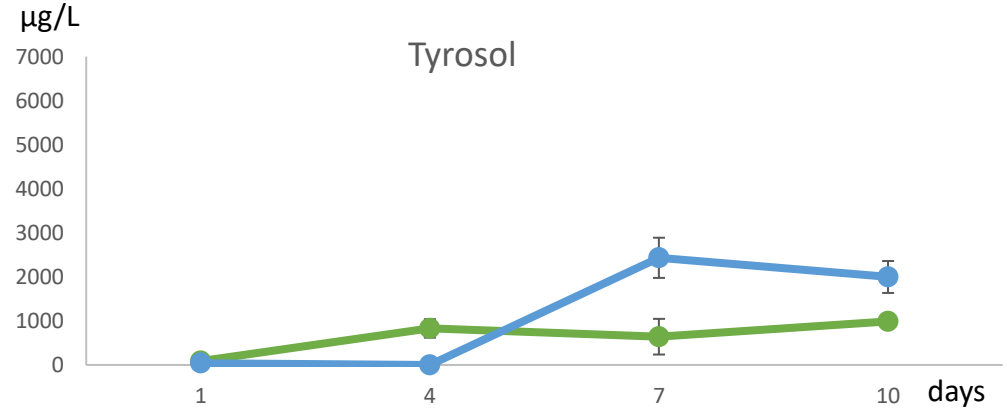


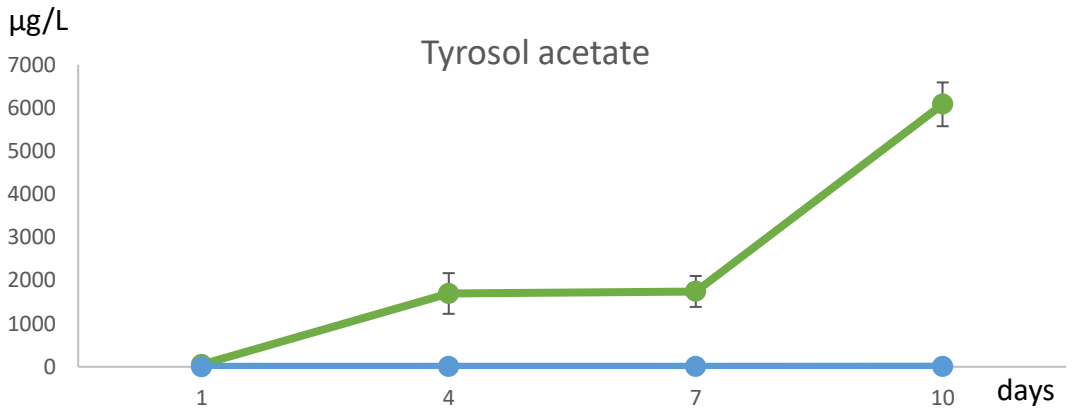


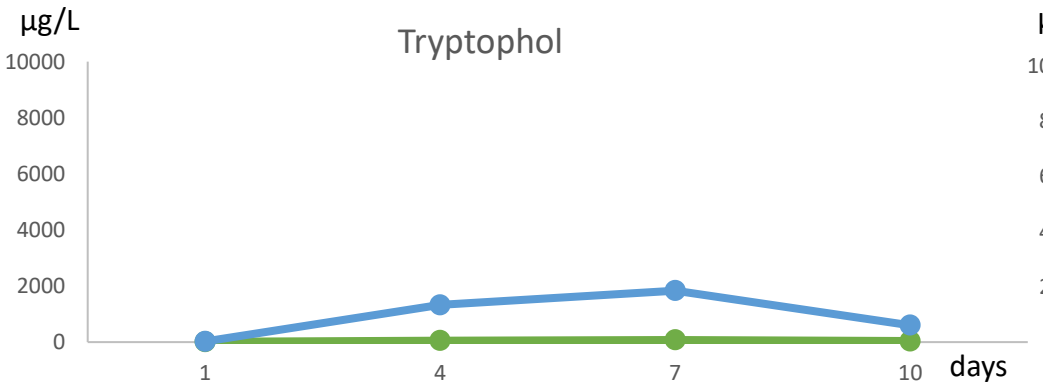
Analysis of higher alcohols from aromatic amino acids and their corresponding acetates

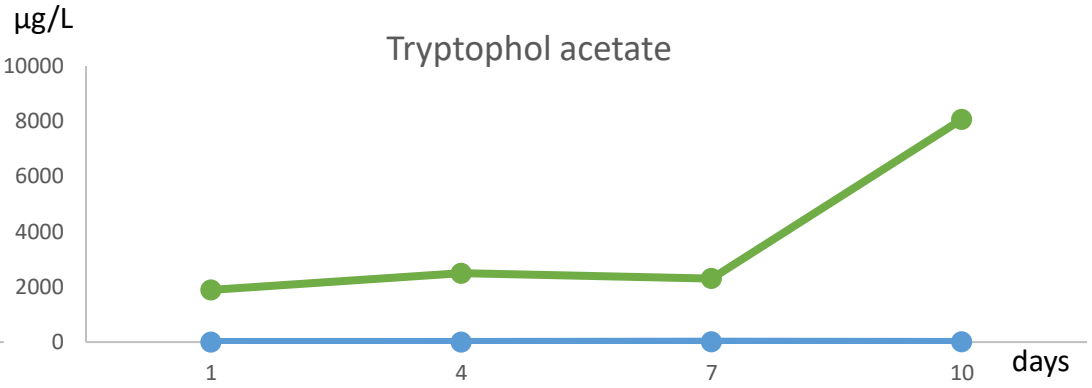




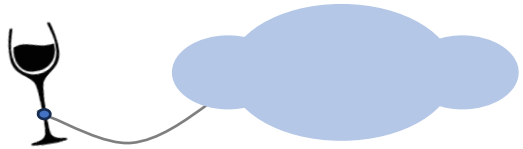








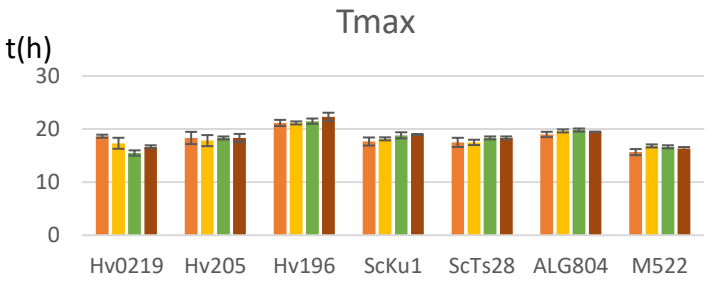
¿The acetylation capacity of *H. vineae* could be related with its friendly behaviour?

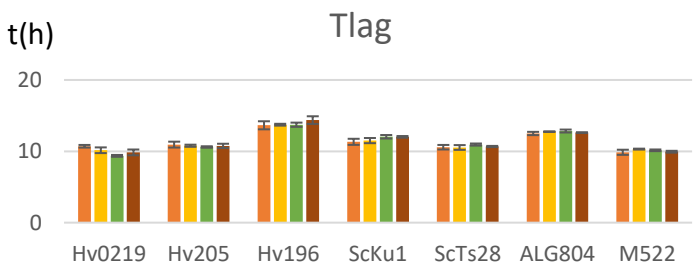


Differences in growth kinetic parameters

2-Phenylethanol and 2-phenylethyl acetate

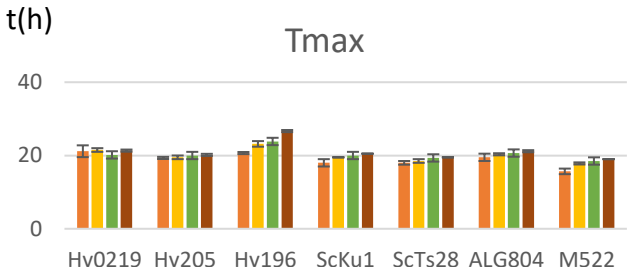
15mg/L

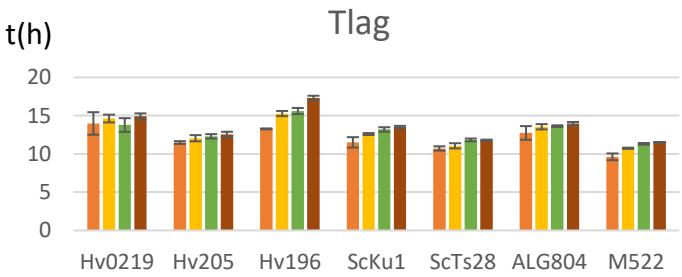




Tyrosol and tyrosol acetate

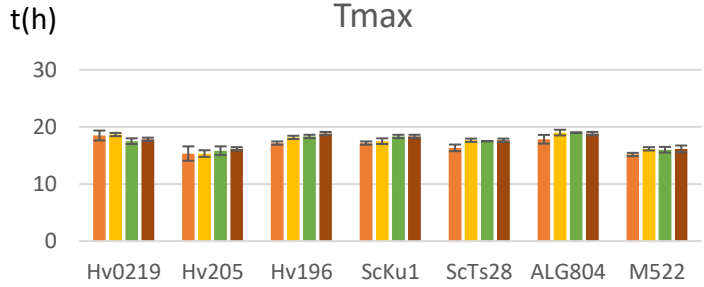
5mg/L

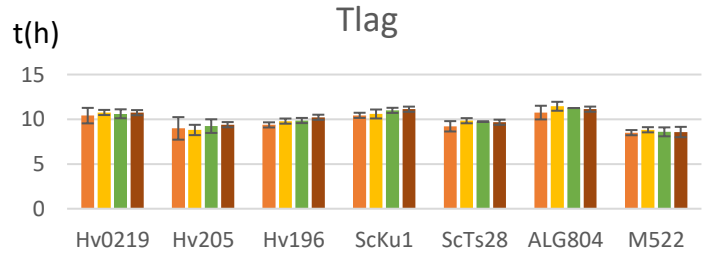




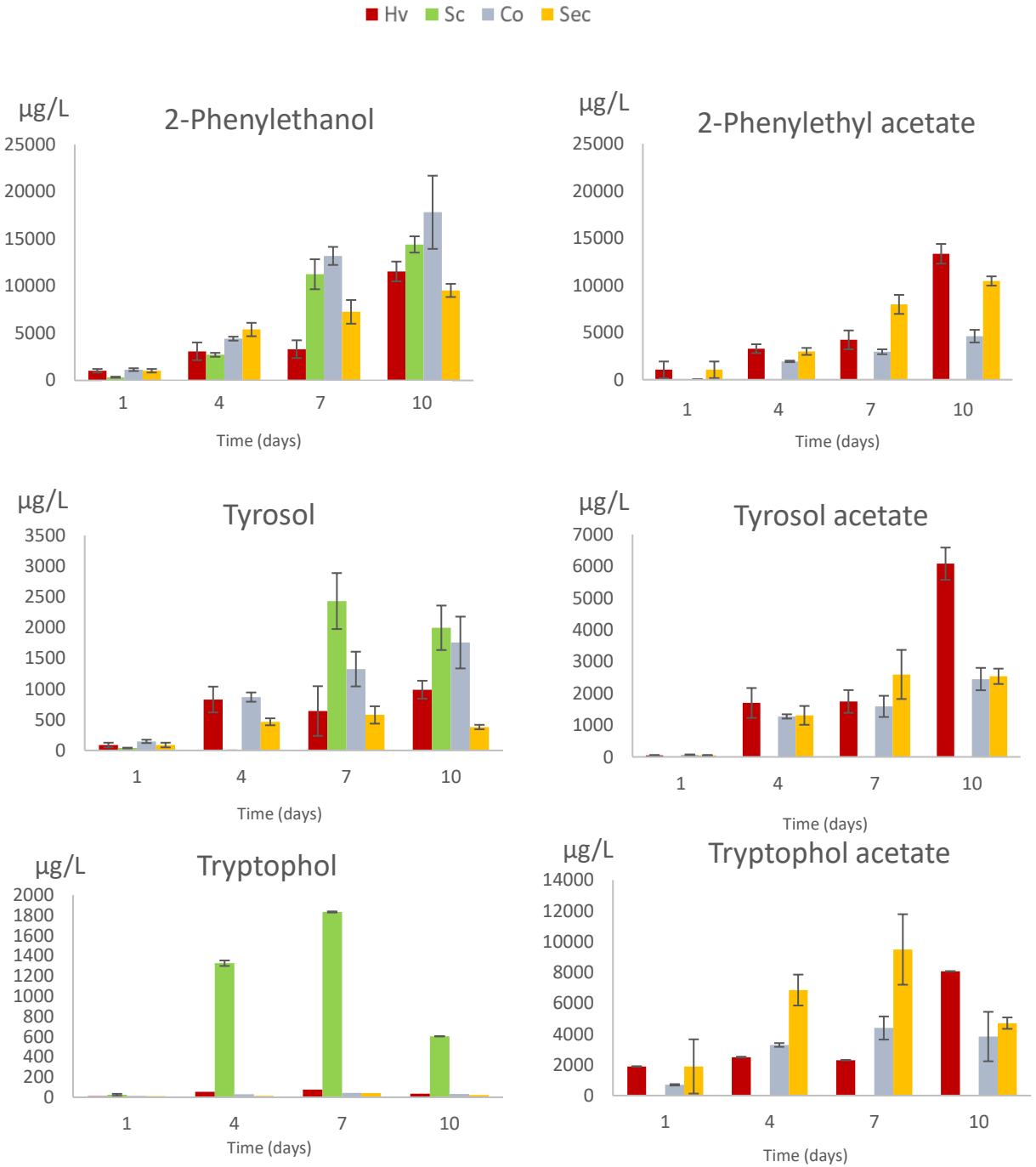
Tryptophol and tryptophol acetate

5mg/L





control ester acetate alcohol acetate + alcohol



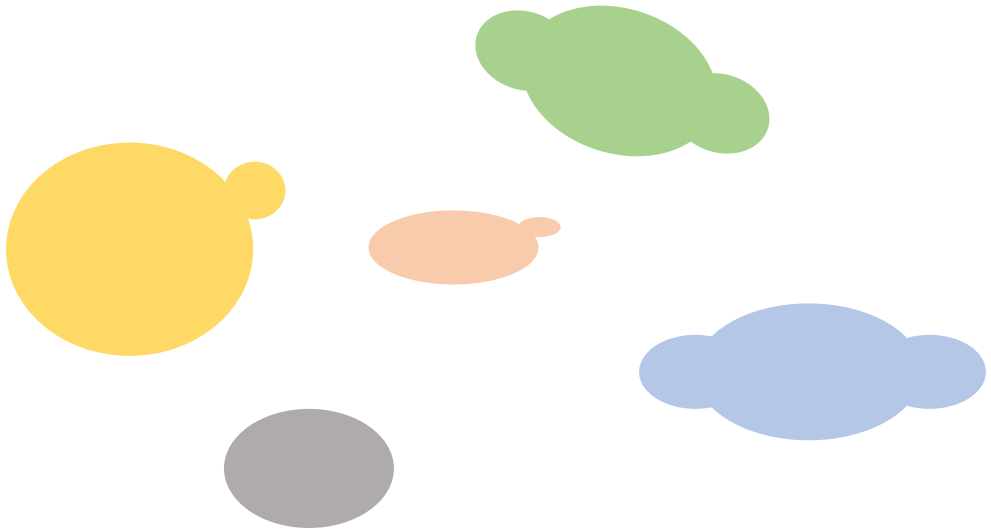
The inoculation strategy modulate the levels of alcohols and acetates during the fermentation process

Conclusions:

- Higher alcohols derived from aromatic amino acid cause light effects on the growth of *H. vineae* and *S. cerevisiae* strains mainly increasing Tmax and Tlag

- The most evident effect is obtained with tryptophol that slowed down the growth of most strains compared with control and tryptophol acetate

- The effect of acetates is not protective against the presence of alcohols but probably they have a detoxifying role

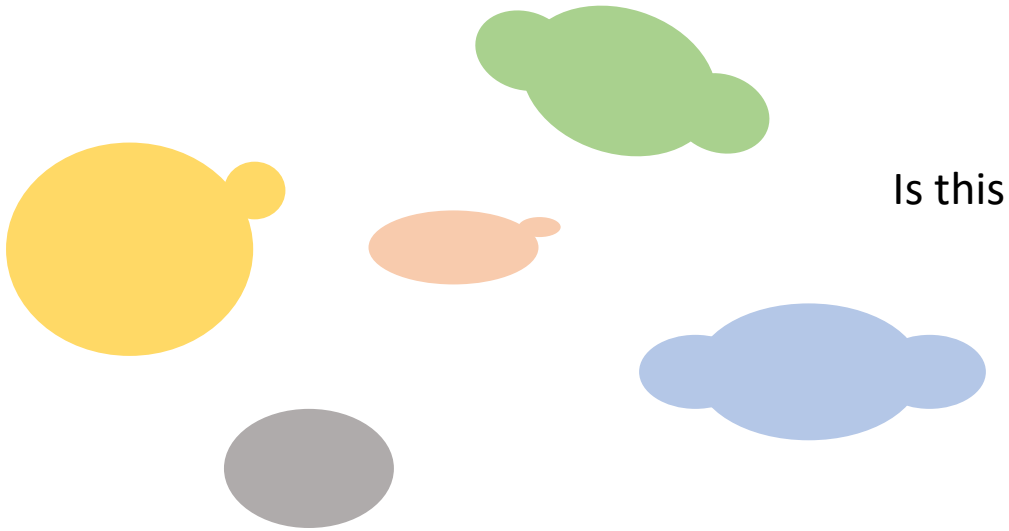


Conclusions:

- Higher alcohols derived from aromatic amino acid cause light effects on the growth of *H. vineae* and *S. cerevisiae* strains mainly increasing Tmax and Tlag

- The most evident effect is obtained with tryptophol that slowed down the growth of most strains compared with control and tryptophol acetate

- The effect of acetates is not protective against the presence of alcohols but probably they have a detoxifying role



Is this similar for other yeast species?