

AGROTUR II

Simpozij Akademia o teranu/Accademia di Terrano Grad Štanjel/Il castello Štanjel 8. 11. 2018

Preliminarni rezultati študije mlečnokislinskih bakterij povezanih z vinom Teran

I risultati preliminari dello studio di batteri malico-latici associati ai vino Terrano

dr. Lorena Butinar in Jelena Topić Božič
Univerza v Novi Gorici

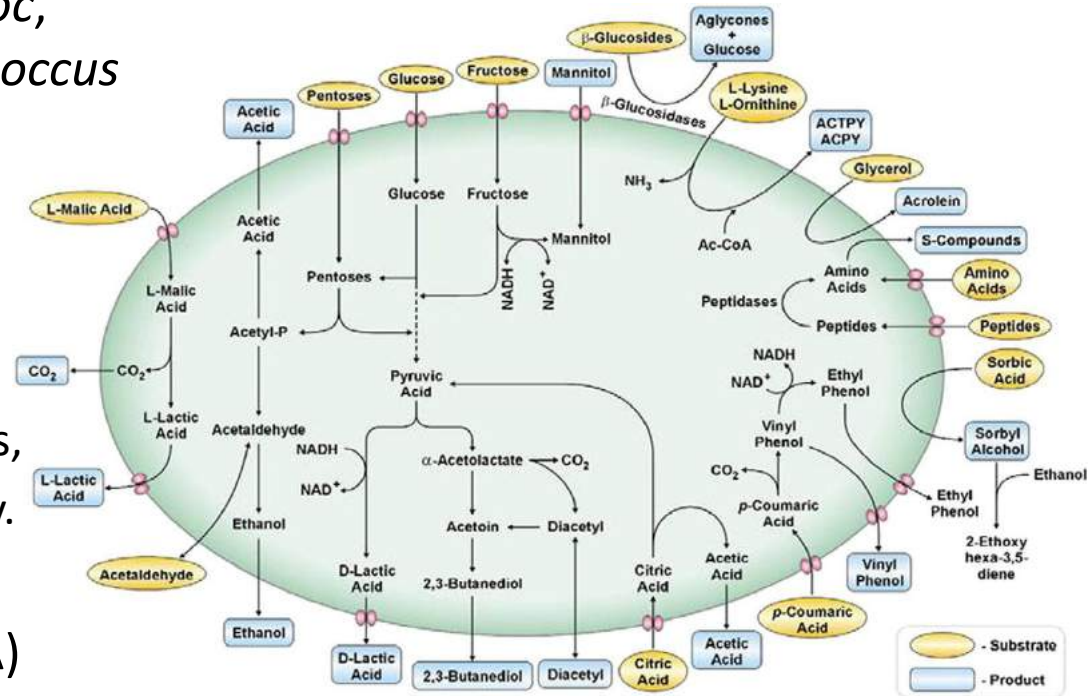
LACTIC ACID BACTERIA (LAB)

M.S. Cappello et al. / International Journal of Food Microbiology 243 (2017) 16–27

- Naturally present in grapes, musts and wines
 - predominant genera *Leuconostoc*, *Pediococcus*, *Lactobacillus*, *Oenococcus*

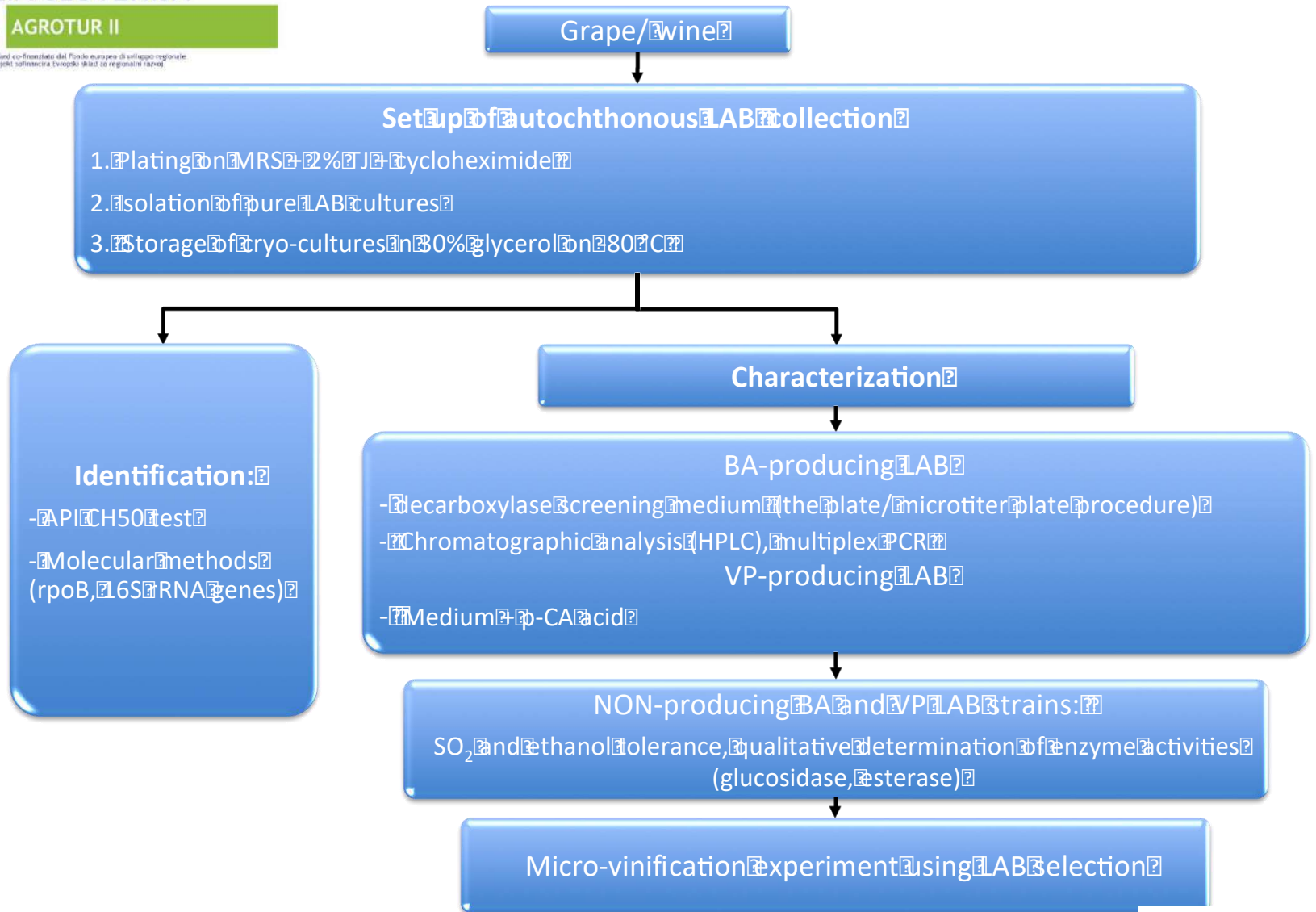
- Malolactic fermentation (MLF) – conversion of L-malic to L-lactic acid
 - a decrease in total wine acidity,
 - enhances organoleptic properties,
 - improves microbiological stability.

- Formation of biogenic amines (BA)
- Formation of volatile phenols



LACTIC ACID BACTERIA (LAB)

- to isolate, characterize and identify autochthonous LAB present on grapes and wines
- to test autochthonous LAB for wine production

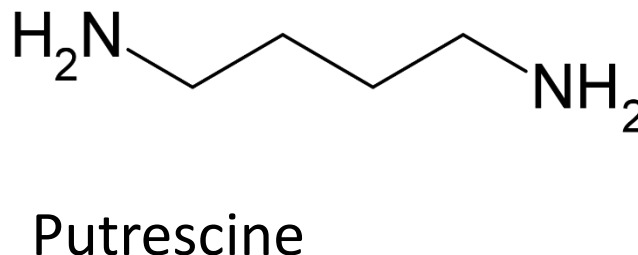
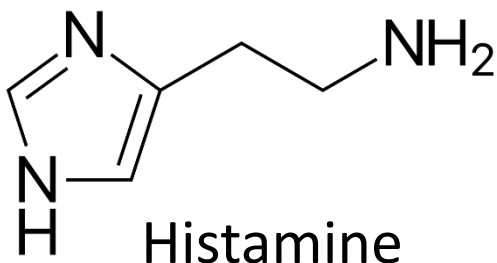


LACTIC ACID BACTERIA (LAB)

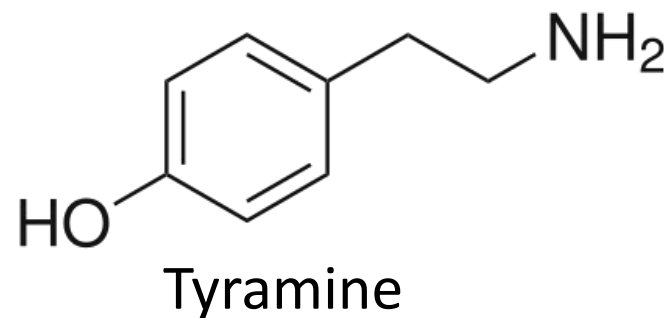
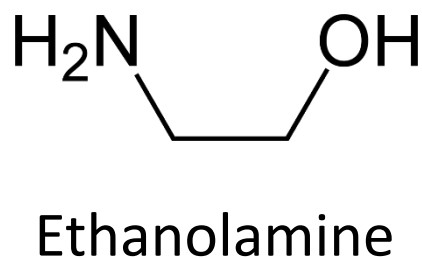
- tested 227 LAB strains:
 - 30 strains thyramin-producers
 - 6 strains putrescine-producers
 - 9 strains cadaverine-producers
 - 6 strains histamine-producers
 - 13 strains ethyl phenol-producers

ANALYSIS OF BIOGENIC AMINES

Analysis was focused on the detection of **five biogenic amines**:

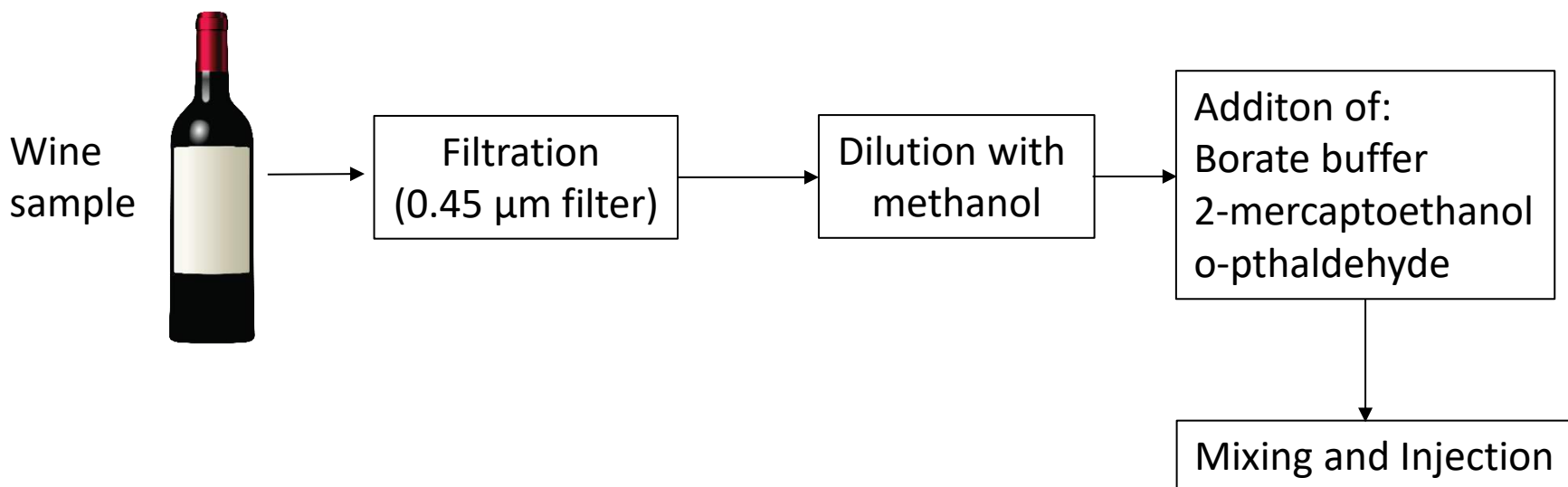


Cadaverine



SAMPLE PREPARATION

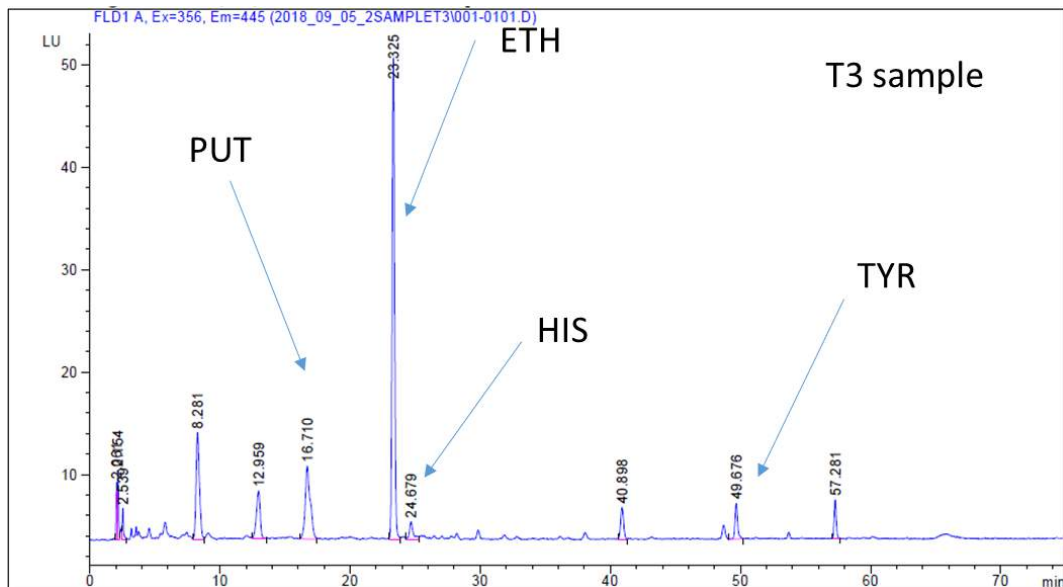
- 12 wine samples analyzed (T1 – T12)
- Analysis was performed in duplicates



Sample was prepared directly before the injection due to instability of derivatives

ANALYSIS OF BIOGENIC AMINES

HIGH PERFORMANCE LIQUID CHROMATOGRAPHY COUPLED TO
FLUORESCENCE DETECTOR (adapted method from OIV - Resolution OIV-
Oeno 346/2009)



- TIME OF ANALYSIS PER SAMPLE: 75 min
- CALCULATION OF CONCENTRATIONS:
external standards of biogenic amines
- Retention times
 - Putrescine (PUT): 16.7 min
 - Cadaverine (CAD): 22.0 min
 - Ethanolamine (ETH): 23.6 min
 - Histamine (HIS): 24.8 min
 - Tyramine (TYR): 49.7 min

RESULTS

Presence of biogenic amines in tested wines.

BIOGENIC AMINE					
SAMPLE	PUT	CAD	HIS	TYR	ETH
T1	+	-	-	+	+
T2	+	-	+	+	+
T3	+	-	+	+	+
T4	+	-	-	+	+
T5	+	-	-	+	+
T6	+	-	-	+	+
T7	-	-	-	+	+
T8	+	-	-	+	+
T9	+	-	-	+	+
T10	+	-	-	+	+
T11	+	-	-	+	+
T12	+	-	-	+	+

Concentration range [mg/L] of the tested biogenic amines.

SAMPLES	PUT	CAD	HIST	TYR	ETH
T1 – T12	14,0 – 114,5	n.d.	n.d – 10,3	< LOD – 5,7	7,7 – 16,7

* n.d. = not detected

* <LOD = under limit of detection

- The highest concentration of biogenic amine was found in sample T10 (putrescine – 115 mg/L).
- In general putrescine was present in the highest concentrations in the samples
- In two of the samples (T2 and T3) histamine was presented in concentration 2 and 10 mg/L.
- Average concentration of putrescine was 47.5 mg/L, while ethanolamine had the average concentration of 12.9 mg/L

Hvala za pozornost.
Grazie per l'attenzione.