

Davide Slaghenaufi, Carla Indorato, Eduardo Vela, Giovanni Luzzini, Maurizio Ugliano
Department of Biotechnology, University of Verona, Italy

Introduction

Methyl salicylate (MeSA) has been reported as a potentially impactful compound in Verdicchio wines produced in central Italy. Lugana is another white wine produced in the north-east of Italy from a grape locally known as Trebbiano di Soave, sharing a very similar genetic background with Verdicchio. The aims of this study were evaluating MeSA occurrence in Lugana, assessing its aroma impact on white wines aroma and elucidating its biogenesis during vinification

Materials and Methods

Wine samples:

15 Lugana
7 Verdicchio
7 Pinot grigio
3 Garganega

Volatile compounds analysis:

Solid Phase Microextraction (SPME) and Solid Phase Extraction (SPE) sampling techniques coupled to GC-MS analysis allowed to identify and quantify a total of 62 volatile compounds

Resting cells protocol

Yeast strain
AWRI 796

YPD a 30 °C
Untill $4 \cdot 10^7$
cells/mL

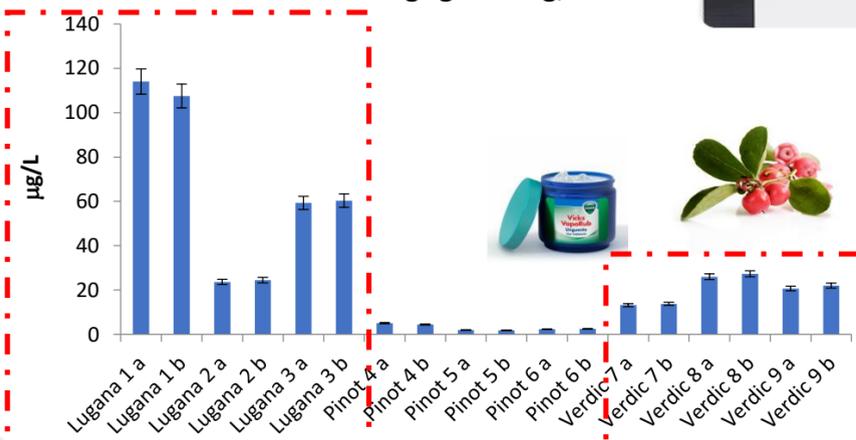
Yeast pellet
+5 mL of
phosphate citrate
buffer pH 5
+7,5% glucose
+ target substrate

Incubation :
30°C for 72
hours
GC-MS analysis

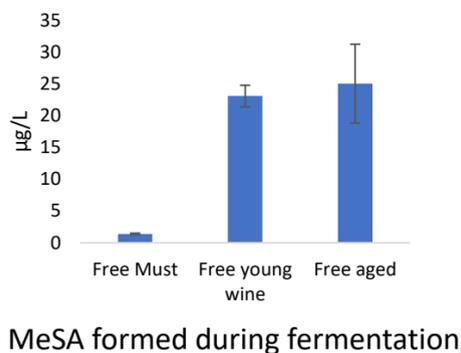
Results

MeSA content in white wines:

Lugana 15 – 120 ug/L
Verdicchio 10 – 23 ug/L
Pinot grigio <3 ug/L

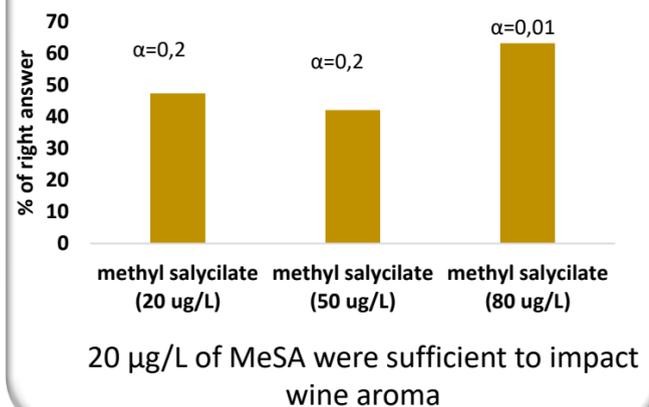


Formation of MeSA during winemaking



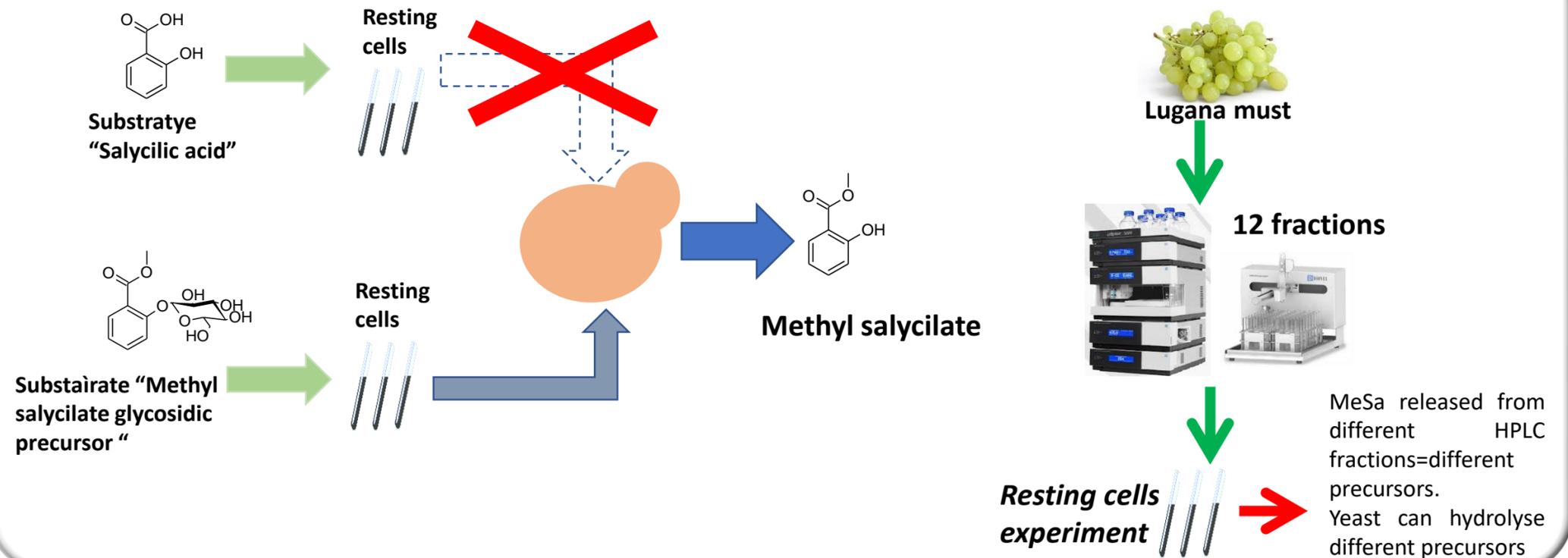
Sensory impact of MeSA

Triangular test



20 µg/L of MeSA were sufficient to impact wine aroma

Study of MeSA biogenesis catalyzed by yeast:



CONCLUSIONS

MeSA is present in Lugana wines at concentrations sufficiently high to impact wine aroma. MeSA formation is mostly due to yeast cleavage of grape glycosidic precursor. MeSA from different HPLC fractions was observed, suggesting multiple possible precursors