

FACTORS INFLUENCING THE AMINO ACID AND POLYAMINE COMPOSITION OF RED GRAPE BERRIES

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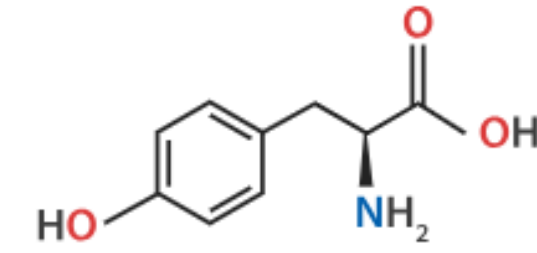
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INTRODUCTION

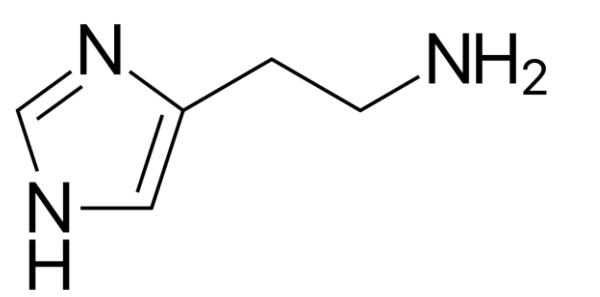
Grape amino acids (AAs):

- Source of nitrogen for yeast during fermentation
- Precursors of important wine aroma compounds
- Change during the ripening process

Polyamines (PAs) are synthesised by the plant as growth regulators.



Climatic conditions can influence the concentration of compounds found in grapes.



Objective: study the influence of different factors as grape variety, degree of ripeness and vintage on the concentrations of amino acids and polyamines.

METHODOLOGY

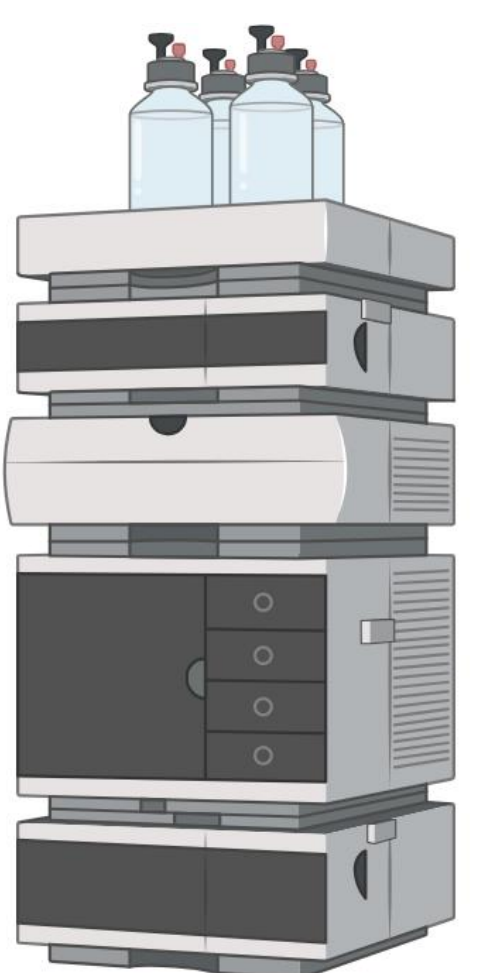
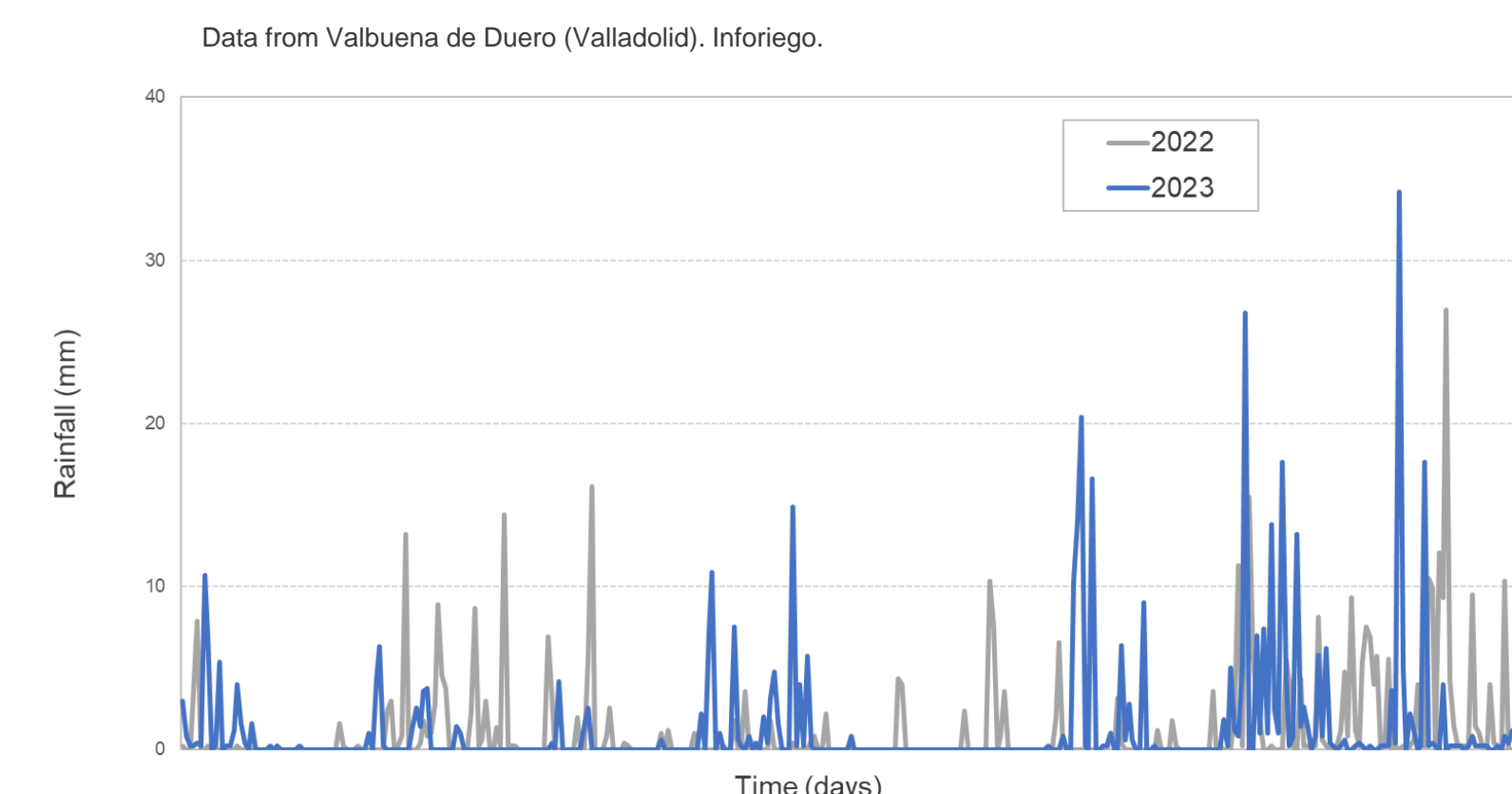
55 samples

- 3 different stages of ripeness
 - Sampling 1 (15-20 days before harvest)
 - Sampling 2 (7-10 days before harvest)
 - Optimum ripeness (harvest)
- 2 vintages (2022 and 2023)
- 8 vineyard plots groups
- 3 red grape varieties
 - Tempranillo (TF), Cabernet Sauvignon (CS) and Merlot (MT)



Amino acids (AAs) and polyamines (PAs) were analysed by derivatization and using reverse-phase HPLC-DAD.

Climatic data



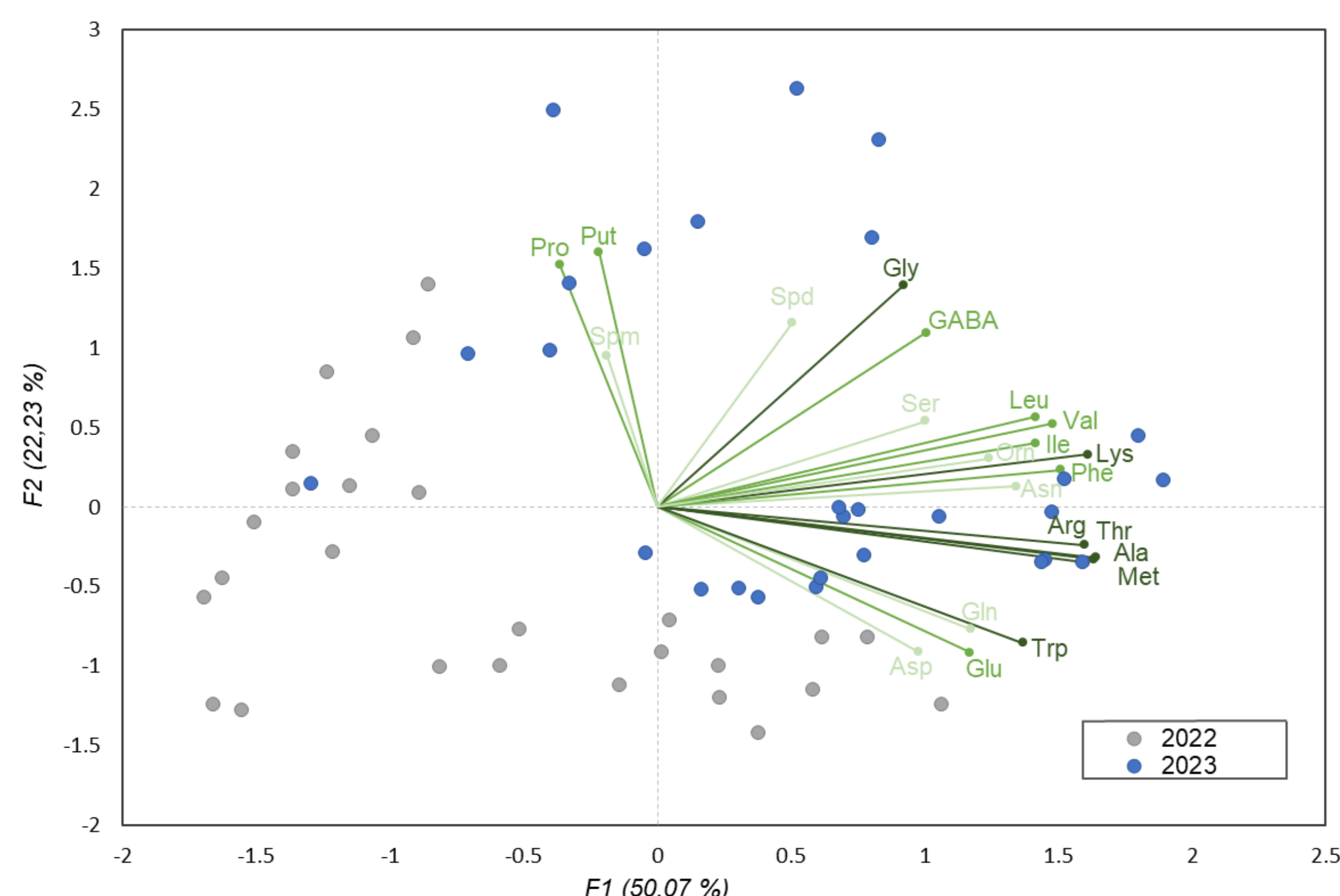
Data analysis: MANOVA and PCA

RESULTS

During the ripeness process, PA content of grapes increased

Degree of ripeness	Sampling 1	Sampling 2	Harvest
Spd	2.29a	2.35a	4.12b
Spm	0.86a	1.18a	2.43b
Put	5.19a	6.64b	6.72b

Content of most AAs was higher in 2023, specially GABA, glycine and lysine. Years with different rainfall distribution.



CONCLUSIONS

- Grape variety and vintage have the greatest influence on AA concentrations
- PAs are most influenced by ripeness and grape variety

Plot group	PDC-CS	Terrazas-CS	Vallejos-MT	PDC-MT	A-TF	E-TF	PSTM-TF
Pro	1867d	1558c	1584c	1146b	338a	444a	445a
Put	10.8c	10.3c	8.17b	7.92b	2.49a	1.89a	1.79a
Spm	2.32c	0.95a	2.52c	2.05bc	0.51a	1.25ab	0.85a
Trp	11.2a	5.28a	10.8a	7.21a	31.4b	31.9b	42.6c
Ala	50.7bc	21.1a	52.4c	31.7ab	63.8c	80.9d	91.9d
Arg	233bc	55.5a	247c	130ab	241c	357d	426d
Gln	236abc	76.7a	174ab	103a	334bc	363c	527d

ACKNOWLEDGEMENTS

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