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CHARACTERISATION OF PHENOLIC COMPOUNDS BY LC-MS/MS IN ANCIENT RED GRAPES TYPICAL OF AOSTA VALLEY

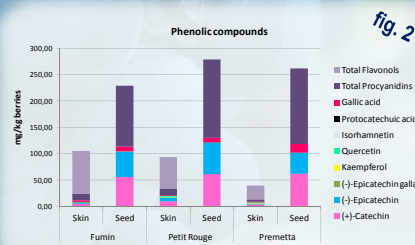
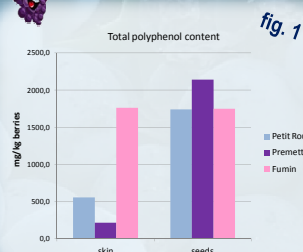
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INTRODUCTION

Polyphenols are the most important phytochemicals in grapes because they possess many biological activities and health-promoting benefits. The profile of phenolic compounds varies depending on varieties and it is influenced by vineyard management and by growing conditions. In particular, altitude and exposure of the vineyard cause a change in solar radiation, light and thermal microclimate around the grapes with consequences on polyphenols accumulation processes in terms of quantity and profiling. The aim of this study was to characterize the phenolic profile of three autochthonous grape varieties (Fumin, Petit Rouge and Premetta) grown in Aosta Valley, a small alpine region in the northwest of Italy, by liquid chromatography coupled with mass spectrometry.

RESULTS



At harvest, *Fumin* was the cultivar with the highest total polyphenols content in the skin while *Premetta* had the highest amount in the seed (fig.1).

Primary LC-MS/MS results (fig. 2) indicate that flavonols were the most abundant polyphenols in the skin of the three varieties studied, while flavanols, particularly catechin, were the highest phenolic compounds in the grape seed. *Petit Rouge* was the variety with the highest concentration of flavanols, while *Fumin* and *Premetta* had the highest amount of the other classes of polyphenols studied until now, respectively in the skins and in the seeds.

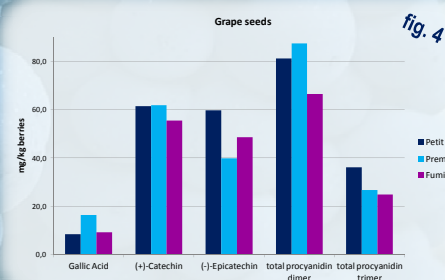
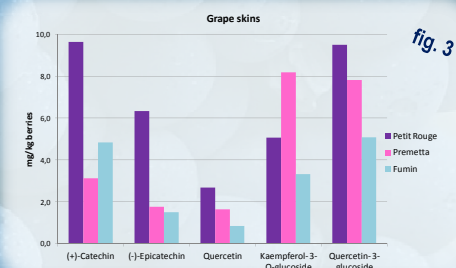
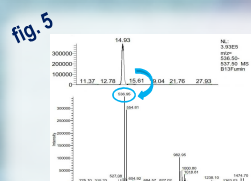


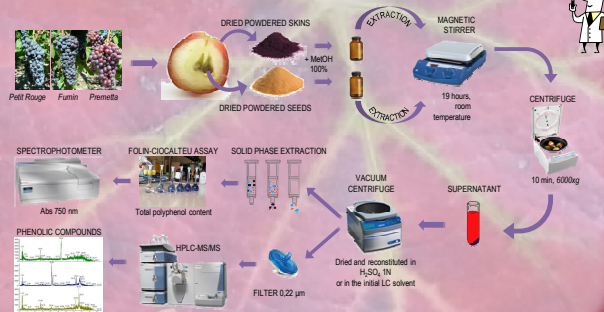
Figure 3 shows the main phenolic compounds, until now, identified in grape skin extracts. (+)-Catechin, (-)-Epicatechin, Quercetin and Quercetin-3-glucoside have the highest amount in Petit Rouge skin extract. Kaempferol-3-O-glucoside is higher in Premetta skin extract than in the others.

Figure 4 shows the main phenolic compounds identified in grape seed extracts up to now. Gallic acid and Total Procyandin Dimer have the highest amount in Premetta seed extract. (-)-Epicatechin and total Procyandin Trimer are higher in Petit Rouge seed extract than in the others.

Figure 5 shows the LC-MS chromatogram and the MS spectra of a polyphenol not already identified. This compound has the highest intensity in Fumin skin extract.



MATERIALS & METHODS



MORE RESULTS

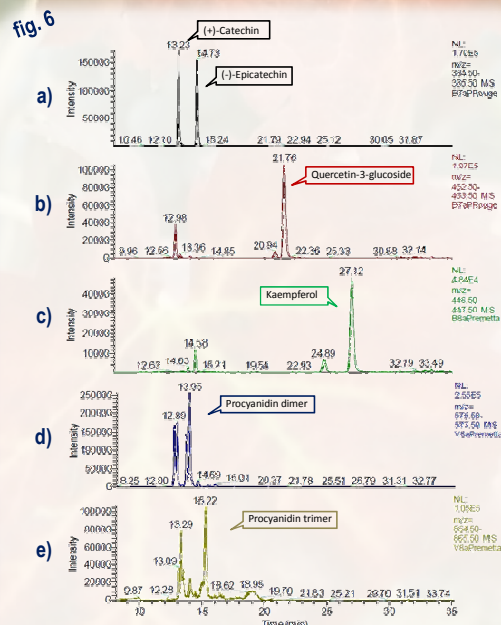


Figure 6 shows the LC-MS chromatograms of some flavanols ((+)-Catechin, (-)-Epicatechin, Procyanidins) and flavonols (Quercetin-3-glucoside, Kaempferol) more concentrated in the skins (a, b, c) and seeds (d, e) of *Petit Rouge* (a, b) and *Premetta* (c, d, e) cultivars.



CONCLUSIONS

These preliminary results suggest that ancient cultivars grown under particular conditions such as high solar radiation, altitude and harsh climate, have a high amount and a characteristic profile of phenolic compounds. Our research is continuing with the assessment of the ability of extracts from grape berry skins and seeds in preventing cardiovascular diseases.

ACKNOWLEDGEMENTS

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