CHEMICAL COMPOSITION OF MERLOT, CABERNET SAUVIGNON, AND CARMENÈRE GRAPES (*VITIS VINIFERA* L.) DURING RIPENING, EVALUATED BY CANOPY SIDE

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AIM

This work compared the chemical composition of Merlot (M), Cabernet Sauvignon (CS), and Carmenère (CR) during berry ripening, evaluated by canopy side (east, e and west, w).

METHODS

An experimental vineyard with north-south row orientation, located in the O'Higgins Region of Chile was used for this trial. For each cultivar, three representative rows were selected, and 200 berries were randomly collected, keeping samples of both sides of the canopy separated. Samplings were carried out fortnightly from the veraison to the harvest (i.e., 0, 7, 21, 35 and 49, days post veraison). Chemical analyses were performed as indicated in Figure 1.

Merlot (M)
Cabernet Sauvignon (CS)
Carmenère (CR)

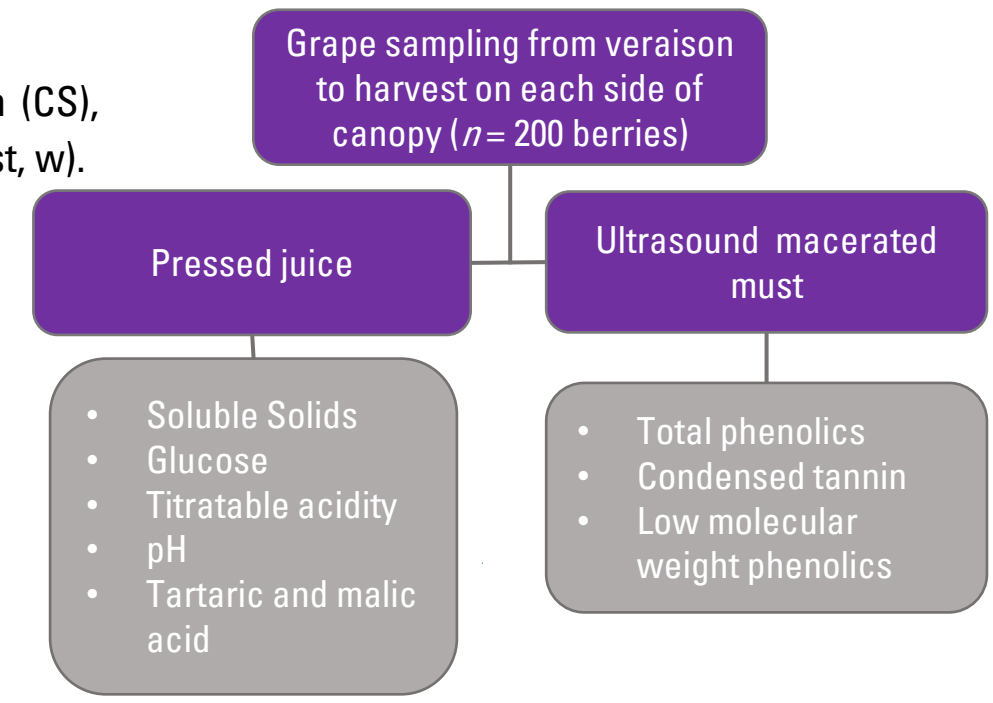

Figure 1. Fruit sampling, processing and analyses

RESULTS

Major differences in fruit composition among varieties were observed including sugars, acids and phenolics. Total phenolics and condensed tannin of Cabernet Sauvignon and Merlot were significantly higher than Carmenère. However, no major statistical differences were observed when fruit from different side of the canopy were compared, except for a few phenolic compounds. For instance, (+)-catechin was higher in CS, malvidin-3-glucoside was initially higher in the east facing clusters of each variety, but they leveled off near ripening. Besides that, malvidin-3-glucoside shows significant differences in M and CS against CR.

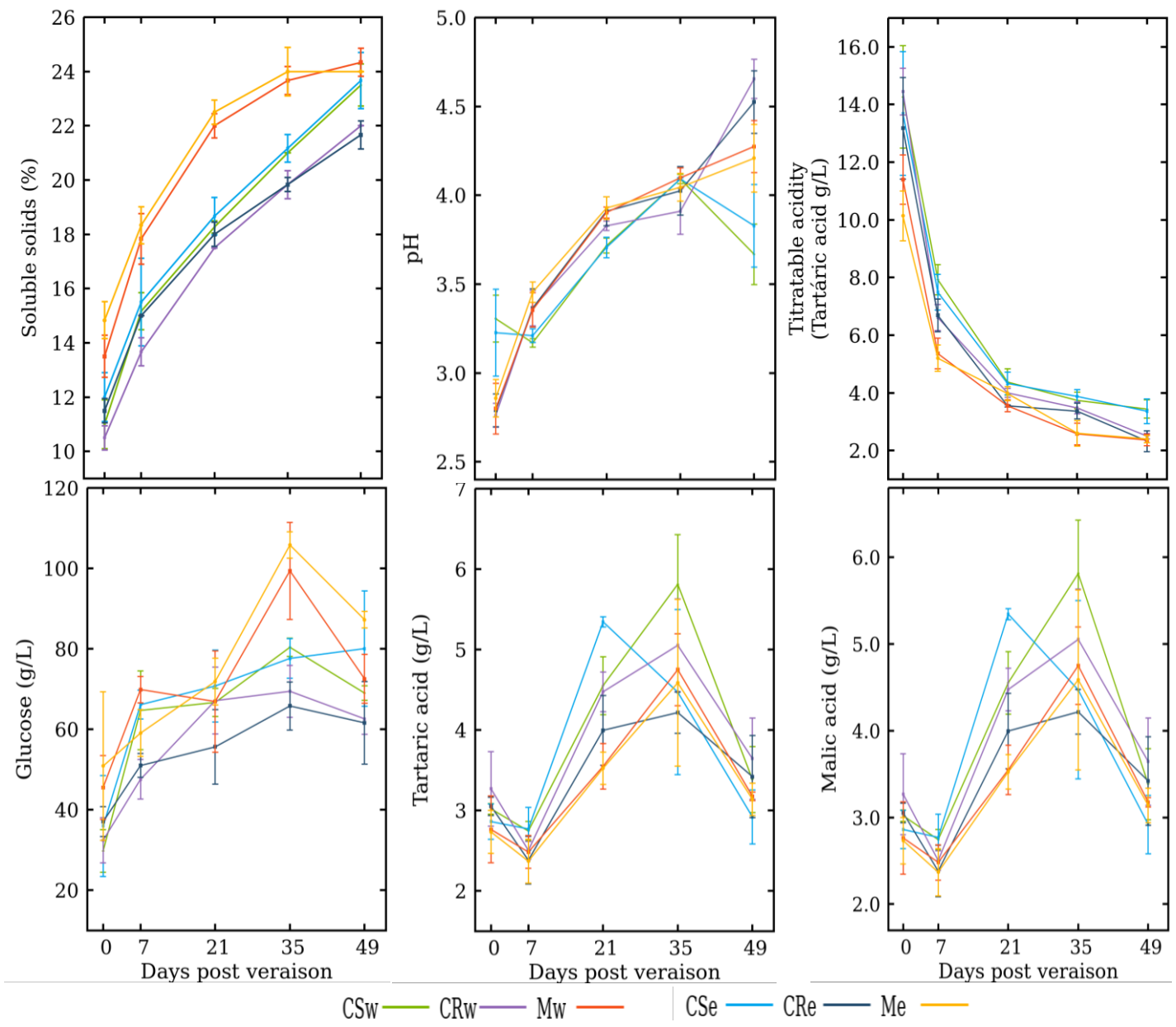

Figure 2. Physicochemical characteristic of juice during ripening

Table1. Low molecular weight phenolics

	(+)-Catechin (mg/L)			Malvidin-3-O-Glucoside (mg/L)		
Post veraison						
CRe	46,19 ±	5,30	a	120,74 ±	19,49	c
CRw	54,52 ±	3,90	ab	100,36 ±	6,24	b
CSe	155,91 ±	34,33	c	91,13 ±	11,88	b
CSw	195,81 ±	61,74	c	68,51 ±	12,12	a
Me	87,00 ±	9,89	ab	94,95 ±	8,11	b
Mw	92,51 ±	14,00	b	74,80 ±	2,53	a
49 Days post veraison						
CRe	28,87 ±	8,72	c	141,73 ±	8,86	c
CRw	26,20 ±	10,10	bc	133,18 ±	9,44	c
CSe	27,74 ±	2,20	bc	121,90 ±	5,59	b
CSw	31,00 ±	6,14	c	116,05 ±	7,43	b
Me	19,25 ±	4,17	ab	86,34 ±	8,93	a
Mw	17,10 ±	2,25	a	76,54 ±	7,20	a

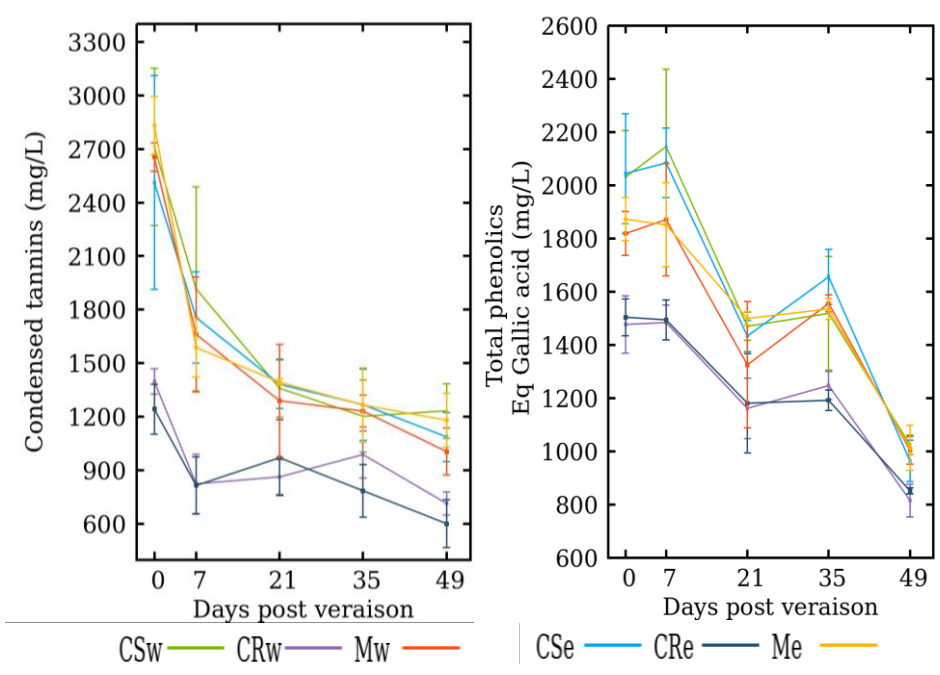

Figure 3. Phenolic evolution during ripening

CONCLUSION

Only minor differences in low molecular weight phenolics were observed when fruit from both sides of the canopy were compared. Besides the prior, significant differences in total phenolics and tannins among varieties were recorded.

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