

# DIFFERENCE OF PHYSICO-CHEMICAL PROPERTIES OF RED WINES IN PET AND B&B PACKAGING



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## Introduction

Type of packaging can affect the quality and physico-chemical features of foods stored over a longer period of time (Ghidossi et al. 2012). Usually wine is packed in glass containers but in recent years PET containers (polyethylene terephthalate), bag-in-box or multilayer packaging have become an option for packaging. Important physico-chemical characteristics of wines that can change over a storage period are alcohol percentage, the amount of acids or SO<sub>2</sub>, specific weight of wines or total dry extract (Kojić and Jakobek, 2019). The aim of this paper was to determine and compare the physico-chemical properties of red wines (Cabernet sauvignon, Frankovka, Merlot and Pinot noir), stored over a period of one year in two different packaging (PET (polyethylene terephthalate) and B&B (bag in box)).

## Materials and methods

Physico-chemical analysis was performed in the wine laboratory of Vupik plus d.o.o. as already described in Kojić and Jakobek (2019).



Wine samples



## Results

Table 1. Physico-chemical properties of red wines in PET and B&B packaging during 12 months of storage

Time (months)	Cabernet sauvignon		Frankovka		Merlot		Pinot noir	
	PET	B&B	PET	B&B	PET	B&B	PET	B&B
Specific weight of wine								
0	0,99215	0,99215	0,99407	0,99407	0,99336	0,99336	0,99280	0,99280
3	0,99220	0,99220	0,99410	0,99405	0,99335	0,99332	0,99275	0,99282
6	0,99220	0,99220	0,99380	0,99390	0,99320	0,99325	0,99255	0,99260
12	0,99222	0,99222	0,99355	0,99355	0,99319	0,99319	0,99257	0,99257
Alcohol (% vol.)								
0	13,94	13,94	13,34	13,34	13,05	13,05	13,57	13,57
3	13,95	13,96	13,32	13,35	13,05	13,06	13,56	13,57
6	13,90	13,90	13,28	13,30	13,08	13,10	13,52	13,54
12	13,85	13,88	13,20	13,25	13,10	13,12	13,47	13,50
Total dry extract (g l <sup>-1</sup> )								
0	26,54	26,54	29,67	29,67	26,97	26,97	26,98	26,98
3	26,59	26,61	29,40	29,55	27,00	27,00	26,89	26,85
6	26,54	26,54	29,67	29,67	26,97	26,97	26,98	26,98
12	26,40	26,45	27,80	27,93	26,80	26,85	25,90	25,98
Total acid (g l <sup>-1</sup> )								
0	5,10	5,10	5,40	5,40	5,80	5,80	5,00	5,00
3	5,11	5,11	5,42	5,44	5,82	5,88	5,05	5,03
6	5,16	5,14	5,50	5,45	5,90	5,90	5,10	5,05
12	5,22	5,17	5,66	5,62	6,10	6,00	5,02	5,00

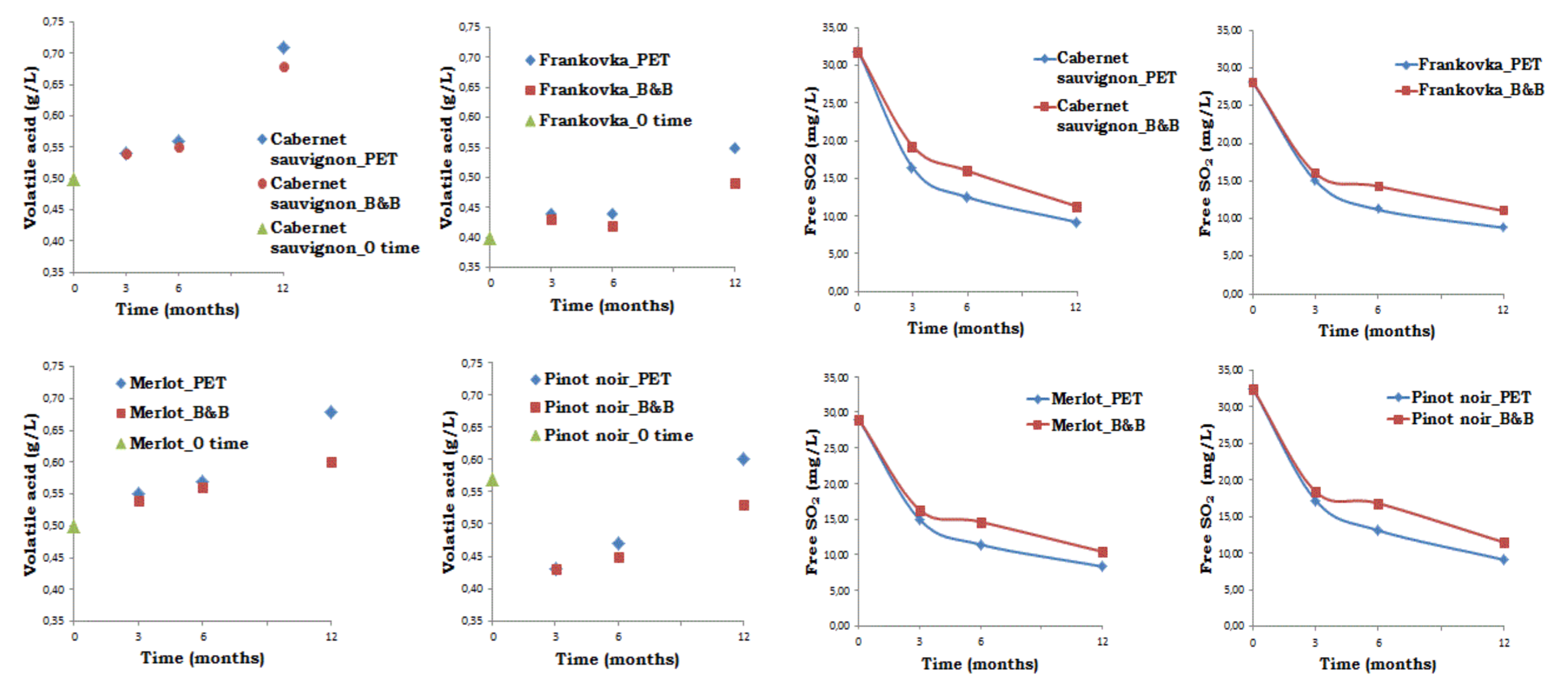


Figure 1. Volatile acids amount during storage of 12 months

Figure 2. Free SO<sub>2</sub> amount during storage of 12 months

## Conclusion

Specific weight of wine, total dry extract, alcohol percentage, total acids content, volatile acids content, free and total sulfur dioxide (SO<sub>2</sub>) content were determined after 3, 6 and 12 months of storage. The results showed that SO<sub>2</sub> content decreased over time in both packages, but in B&B packaging the values of SO<sub>2</sub> were higher. Volatile acid content, despite growing concentration over time, developed slower in B&B packaging. The total acid content increased, the alcohol percentage slightly decreased as well as total dry extract in wines packed in both packaging. Comparing PET and B&B packaging with statistical tests showed that the key physico-chemical indicators were similar in wines packed in two packaging.

## References

- Ghidossi, R., Poupot, C., Thibon, C., Pons, A., Darriet, P., Riquier, L., De Revel, G., & Mietton-Peuchot, M. (2012). The influence of packaging on wine conservation. *Food Control*, 23 (2), 302-311.
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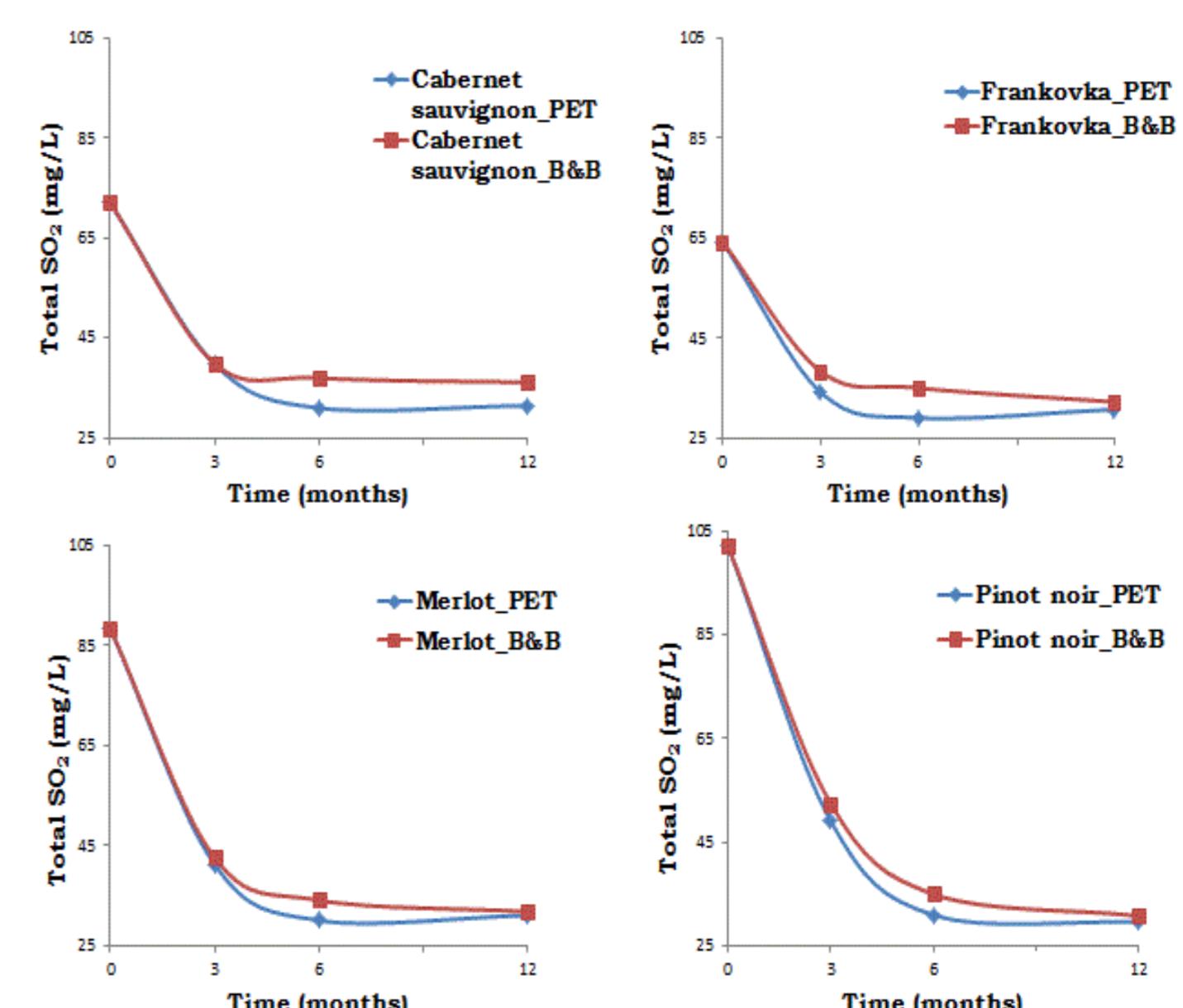


Figure 3. Total SO<sub>2</sub> amount during storage of 12 months