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Wines from honey-fermented orange juice possess antioxidant properties

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INTRODUCTION

Orange juice (OJ) contains a wide range of micronutrients and phytochemicals that have been attributed to preventive effects against the onset of several diseases[1]. Moreover, alcoholic fermentation improves its content of bioactive antioxidant compounds, such as polyphenols, among other[2]. Thus, fermented orange juice (FOJ) with organic honey was finally elaborated to obtain a demi-sec wine (dSW) and sec wine (SW). Sauro Giannini carried out this process at Cantina CITRO. Oxidative stress is responsible for the onset and progression of many chronic pathologies including neurodegenerative diseases, cardiovascular diseases, cancer, diabetes, and obesity[3].

AIM

Thus, this study aimed to assess the antioxidant capacity of these new organic products to provide scientific evidence of their possible health benefits.

METHODS

Ferric reducing antioxidant power (FRAP) and ABTS radical scavenging activity were performed to provide information about the global antioxidant capacity. Moreover, the content of total polyphenols was evaluated. In addition, two principal polyphenols (tyrosol and hydroxytyrosol) were quantified by mass spectroscopy. Also, melatonin and its precursor tryptophan were quantified.

RESULTS

Although FOJ showed the best antioxidant capacity (FRAP: +24.30%; ABTS scavenging: +18.40%), SW increased the antioxidant activity (FRAP: +17.30%; ABTS scavenging: +6.20%), followed by dSW (FRAP: +16.60%; ABTS scavenging: +0.5%) in comparison to OJ (**Figure 1**).
This increase correlated positively with the polyphenols content (vs. FRAP: r = +0.872; vs. ABTS radical: r = −0.945) (**Table 1**).

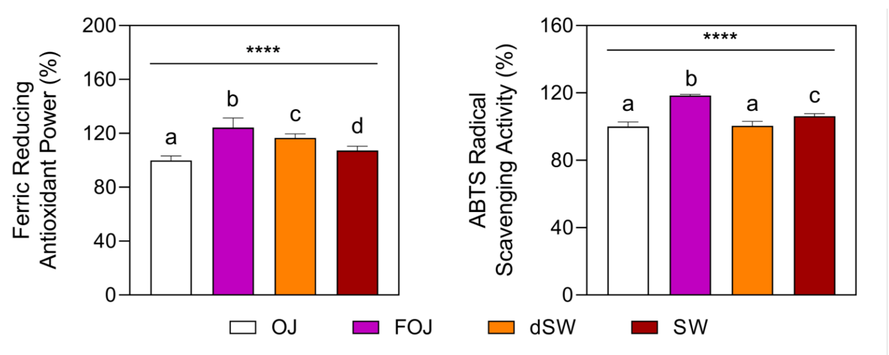

Figure 1.

Table 1

TP vs	Pearson r	p-value
FRAP	0.872	< 0.0001
ABTS radical	−0.945	< 0.0001

When polyphenols were quantified, both wines showed an increase in tyrosol (SW: 10.33 ng/mL; dSW: 12.57 ng/mL) and hydroxytyrosol (SW and dSW: 0.02 ng/mL) compared to the OJ (**Figure 2**).

Finally, the fermentation consumed the tryptophan to synthesize the melatonin, whose values were maintained in both wines (≈ 20 ng/mL) (data not shown).
Melatonin is a ubiquitous molecule that is involved in numerous biological functions and is a well-known potent scavenger of reactive oxygen species[4].

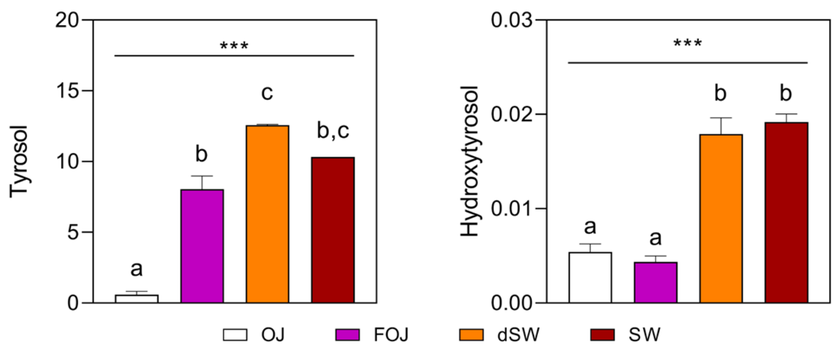

Figure 2.

CONCLUSION

These new wines from organic honey-fermented orange juice possess antioxidant capacity. This could have a beneficial effect on certain non-communicable chronic diseases.

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