

# EFFECTS OF MODERATE WINE CONSUMPTION ON HYPEROXIA-INDUCED CHANGES IN ARTERIAL STIFFNESS AND BLOOD PRESSURE

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## INTRODUCTION

Oxygen is used in the treatment of diverse medical conditions. Since it is often administered empirically, patients may be exposed to significant periods of hyperoxia. As a result, vasoconstriction and acute increase of arterial stiffness occur. Several studies have shown that moderate wine consumption reduces the risk of coronary heart disease, a disease related to vasoconstriction and oxidative stress.<sup>1,2</sup> Our aim was to examine effects of 3 weeks moderate consumption of wine on arterial stiffness and blood pressure before and after acute hyperoxia.

## MATERIALS AND METHODS

14 apparently healthy male volunteers were recruited for consumption trial approved by the Ethics Committee, School of Medicine University of Split. After 2 weeks of drive-in period, without consuming any alcoholic beverage, they all consumed rosé wine (300ml/day) for 3 weeks. At 2 time points, before and after wine intervention, subjects breathed 100% O<sub>2</sub> for 30min. Arterial stiffness (indicated by augmentation index, Alx) and blood pressure, systolic, diastolic and mean arterial pressure (MAP) were measured before (baseline values), at the end and 60min after the end of oxygen breathing period.

## RESULTS

Wine consumption significantly lowered oxygen-induced elevation in Alx relative to drive-in period (-28±4%, -16±4% and -25±6% in wine vs. -28±5%, -6±5% and -22±4% in non-alcohol period, for C, O<sub>2</sub> and post O<sub>2</sub>, respectively). The increase in blood pressure was reduced after wine consumption (132±3 mmHg and 136±3 mmHg vs. 134±3 mmHg, and 143±4 mmHg for systolic, 81±2 mmHg and 85±2 mmHg vs. 81±2 mmHg and 91±3 mmHg, for diastolic and 98±2 mmHg and 102±3 mmHg vs. 99±2 mmHg and 108±3 mmHg, for MAP, in wine vs. non-alcohol period for C and O<sub>2</sub>, respectively). 60 min after the end of oxygen breathing period there were no changes of blood pressure between wine and non-alcohol period.

## CONCLUSION

Acute changes in arterial stiffness and blood pressure induced by hyperoxia are favorably ameliorated by 3 weeks of moderate wine consumption.

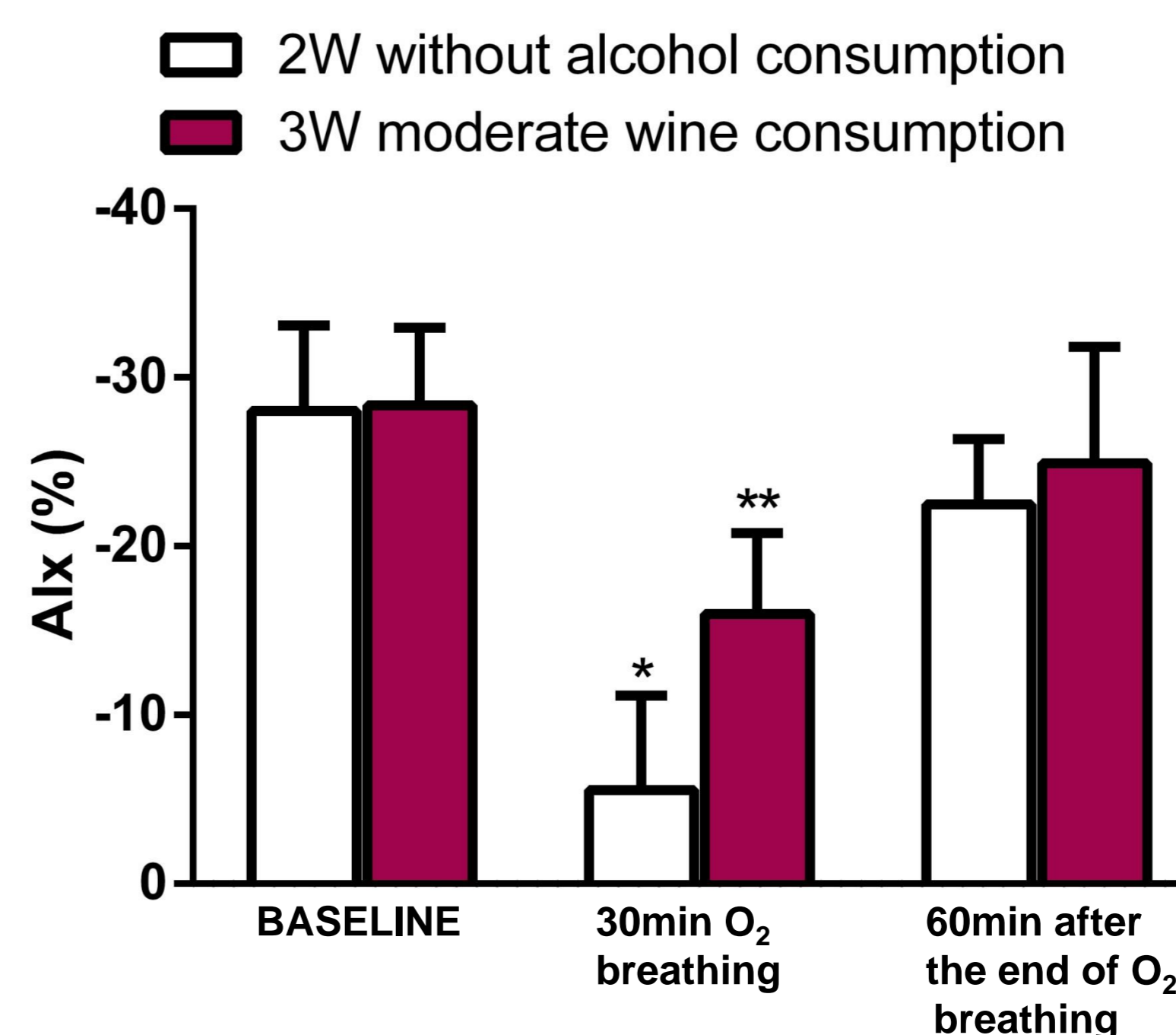


Figure 1. Augmentation index at the end of 2 weeks of drive-in period without alcohol and 3 weeks of moderate wine consumption. Measurement was performed before (baseline values), at the end and 60min after the end of oxygen breathing period. Results are shown as mean±SEM, n=14, \*P<0.05 vs baseline, \*\*P<0.05 vs 2W without alcohol consumption (two-way ANOVA for repeated measures)

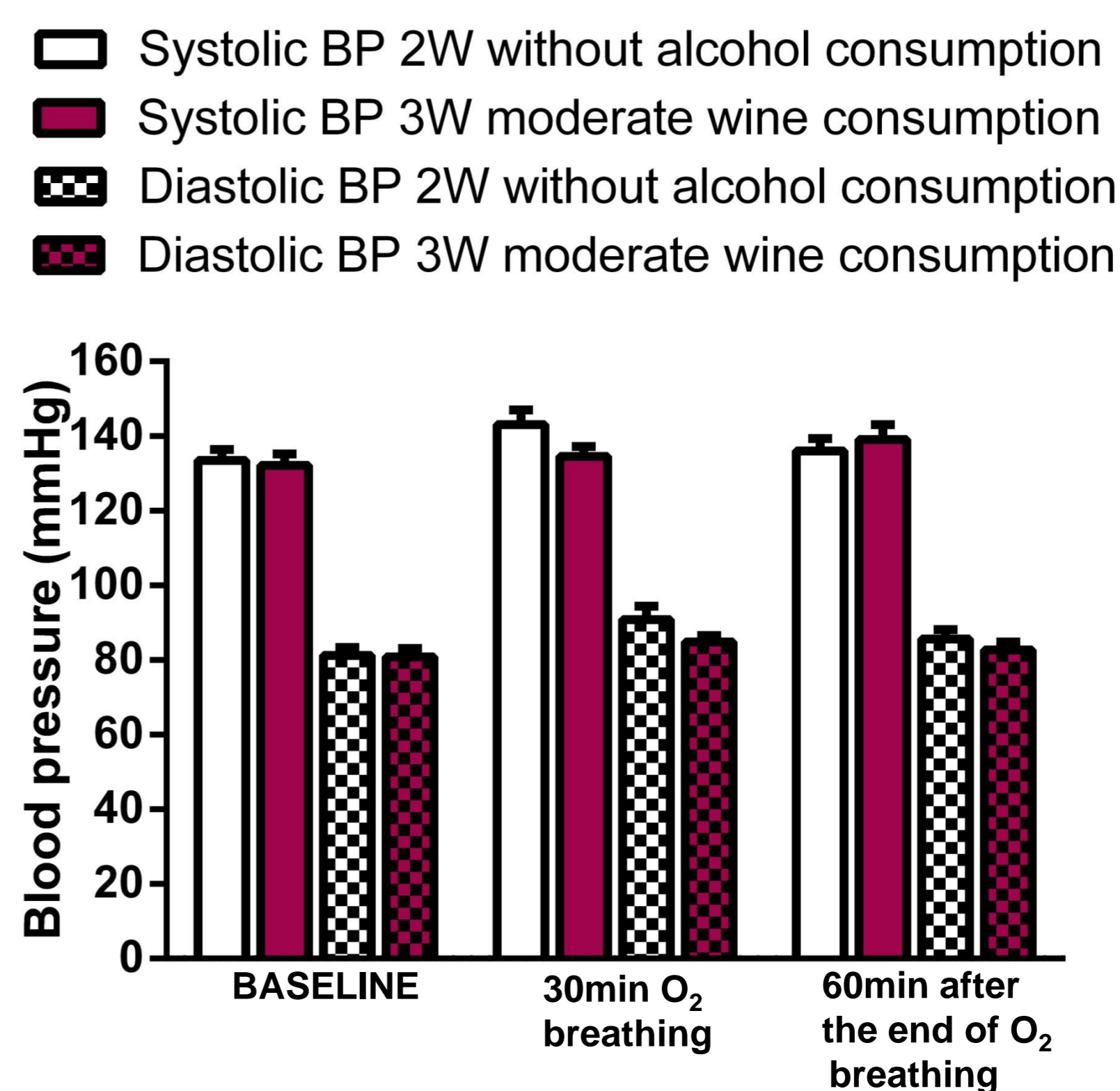


Figure 2. Systolic and diastolic blood pressures at the end of 2 weeks of drive-in period without alcohol and 3 weeks of moderate wine consumption. Measurement was performed before (baseline values), at the end and 60min after the end of oxygen breathing period. Results are shown as mean±SEM, n=14



Figure 3. Arterial stiffness assessment at the end of 30min of O<sub>2</sub> breathing

<sup>1</sup>Gronbaek M, Deis A, Sorensen TI, Becker U, Schnohr P, Jensen G. Mortality associated with moderate intakes of wine, beer, or spirits. *BMJ*. 1995;310(6988):1165-9.

<sup>2</sup>Poli A, Marangoni F, Avogaro A, Barba G, Bellentani S, Bucci M, et al. Moderate alcohol use and health: a consensus document. *Nutr Metab Cardiovasc Dis*. 2013;23(6):487-504.