The Impact of Red Wine on Blood Pressure
Dizziness Continues

To the Editor:

We read with great interest the article of Chiva-Blanch et al recently published in your journal. This randomized controlled trial evaluates the impact of dealcoholized red wine (DRW) on blood pressure (BP) in patients with high cardiovascular risk and concludes on its ability to lower BP. Although excited about the interesting results of this trial, we think several concerns exist that, if addressed in future studies, might lead to a better understanding of the findings and a wider acceptance of the conclusions.

First, office measurement has been used to evaluate the impact of various interventions on BP. Although not specified in the article, the patients were likely to have the interventions (ie, beverage intake) during evening hours. As such, there has been an interval of several hours between the intervention and the measurement of BP, which took place during the office visit the next day. It has been shown that repeated alcohol intake has a biphasic impact on BP (ie, initially decreasing, then increasing). Because these depressor or pressor properties are affected by the differences in time intervals after the last drink, random measurement of BP could be misleading in this setting. The fact that alcohol’s early BP-lowering effect has not been captured in this study makes it conceivable that a bias in favor of DRW has been created. Similarly, in the absence of a preplanned fixed interval between the beverage intake and BP measurement, the time interval is likely to have been variable, which could significantly affect the interpretability of the results. Ambulatory BP monitoring can be very helpful in this setting, providing time-sensitive information on changes in BP in relation to the time of intervention.

Second, the study has evaluated the effect of red wine on plasma concentration of NO, and the authors have concluded that DRW decreases BP through NO-mediated mechanisms. Obviously, BP-lowering effect would be of more importance in those patients who are hypertensive compared to those with normal BP. However, a closer look at the results (Online Table I in Chiva Blanch et al1) shows that NO concentration did not actually change in hypertensive subset of patients who received DRW (mean difference 2.2 µmol/L, CI 2.6–7.1). In the same intervention group, although the increase in NO concentration was found to be significant for nonhypertensive patients, the wide confidence interval (ie, 0.2–11.2) suggests that the data have been too variable to make a precise estimate. Besides, even in the alcohol-containing red wine group there was a statistically-significant correlation between changes in systolic BP and NO concentration (Online Figure I in Chiva Blanch et al1). In our opinion, the heterogeneity of these findings implies the presence of other unidentified mechanism(s) beyond NO to explain the impact of red wine on BP. The authors have appropriately compared the phenolic composition of the red wine before and after the dealcoholization process. However, it is noteworthy that this process, while only minimally changing phenolic composition, has been shown to modify other components of the wine (eg, antioxidants) with potential impact on endothelial function and BP.

Third, objective assessment of adherence is obviously of utmost importance in a trial where a nutritional intervention is evaluated. Although the authors mention that diet and exercise were monitored and a number of markers of alcohol consumption have been used, the concern for lack of a more objective monitoring of the patients’ compliance persists. For example, urinary ethylglucuronide, a biomarker of alcohol consumption, was present in the urine of patients after DRW intervention, although at lower levels compared to alcohol-consuming groups. Therefore, it cannot be ruled out that, unbeknownst to the investigators of this open-label trial, some patients in this group were actually consuming an unidentified amount of alcoholic beverages. Moreover, urinary measurement of sodium and potassium is an established means for objective evaluation of dietary sodium and potassium and, because of its simplicity, is even used in population-based cohort studies for this purpose. Because 24-hour urine samples were collected in the study of Chiva-Blanch et al, it would have been interesting to also measure sodium and potassium in those samples. This inexpensive test not only could provide invaluable objective information on these dietary confounders of hypertension, but could also enable the investigators to further assess patients’ adherence by comparing the patients’ actual sodium and potassium consumption with their presumed intake (Online Table II in Chiva Blanch et al1).

Finally, Pearson correlation test was used to evaluate the association between serum NO level and BP for each intervention (Online Figure I in Chiva Blanch et al1). Because the changes were found to be in the opposite directions for all categories except for systolic BP in gin group, the r values need to be changed to negative (eg, r = −0.598 for systolic BP in DRW group).

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Disclosures
None.

References
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