Antihypertensive medication and the effects of black tea on blood pressure variation

Dear Sir:

In a recent study, “Black tea lowers the rate of blood pressure variation: a randomized controlled trial,” Hodgson et al (1) concluded that a component of black tea, other than caffeine, affects the rate of blood pressure variation during nighttime. The study was well conducted, but after reading, some questions remain.

Participants in this study were volunteers from the general population who were at risk of developing cardiovascular disease because of a systolic blood pressure of 115–150 mm Hg. Only participants without “a recorded history of current diabetes or a recorded history of metabolic diseases, chronic gastrointestinal disorders, cardiovascular, malignancies, renal disease or psychiatric disorders” were included. Participants who used >3 classes of antihypertensive medications were excluded. The 2 aspects in the following paragraphs remain unclear to us.

First, antihypertensive drugs lower blood pressure. Blood pressure without these drugs could be higher than 150 mm Hg. That is why we wondered whether this study population is still representative of a population with a systolic blood pressure of 115–150 mm Hg, because the study included participants who use antihypertensive drugs. It might be better to regard them as participants who are not at high risk of developing hypertension but who already have this condition. If participants using antihypertensive drugs were excluded from the analyses, would the results remain similar?

Second, Hodgson et al’s (1) Figure 1 shows that participants were excluded from the study because of a change in medication. Did these changes include antihypertensive drugs? Were these changes possibly due to changes in blood pressure? And what was the reason that these participants were excluded from the study?

We think more information on medication use would be useful for the interpretation of these results, and we are very interested in the authors’ thoughts on our questions.

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Reply to ML Zwinkels et al

Dear Sir:

We investigated the effects of regular black tea consumption over 6 mo on ambulatory blood pressure (BP) (1) and the rate of BP variation (2). Higher BP variation has been related to increased risk of cardiovascular disease. The rate of measurement-to-measurement BP variation was assessed at baseline and again during the intervention at day 1 and at 3 and 6 mo. Tea compared with control resulted in lower 24-h ambulatory systolic and diastolic BP from 3 mo (1) and an immediate (from day 1) and sustained lower rate of systolic and diastolic BP variation during nighttime (2).

Zwinkels et al question whether the effects on BP variation are applicable to both individuals taking antihypertensive medication and those not taking these medications. The potential for a stronger effect of tea in treated hypertensive individuals, who have a higher rate of BP variation (3), may be relevant to population health messages for black tea intake.

Of the 92 participants, 23 were taking 1–3 antihypertensive medications. The treated hypertensive participants had a higher rate of systolic (P < 0.001) and diastolic (P = 0.005) BP variation compared with participants not taking antihypertensive medication. Three participants withdrew because of changes in antihypertensive medication during the intervention: 2 as a result of an increase in dose of medication, between the day 1 and 3-mo measurements (both were in the control group), and 1 because of a change in type of medication, between the 3-mo and 6-mo measurements (tea group). A change in BP medication is likely to significantly alter BP, the primary outcome of this study (1). The withdrawal of these 3 participants is unlikely to have influenced the interpretation of the results of this study.

Differences between tea and the control in the rate of systolic and diastolic BP variation were generally similar (~10%) among the treated hypertensive participants and the participants not taking antihypertensive medication. Among participants not taking antihypertensive medication (n = 69), tea compared with the control resulted in a lower rate of systolic (P = 0.038) and diastolic (P = 0.038) BP variation. Among the treated hypertensive participants (n = 23), tea compared with the control also resulted in a lower rate of systolic (P = 0.001) and diastolic (P = 0.064) BP variation. These results do not rule out the potential for differential effects according to type of antihypertensive medication. We were not able to investigate this further because of small numbers of participants in each of the subgroups. However, our results do indicate that the effects of tea may be relevant to individuals taking antihypertensive medication as well as those not taking these medications.

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