

are too large for the results to have statistical significance (e.g., mean systolic blood pressure of 124.3 with SD of 17.7 mm Hg and mean diastolic blood pressure of 75.4 with SD of 10.9 mm Hg at baseline). Furthermore, the range of blood pressure measurements (as derived from the means and standard deviations presented in the article) indicate that the volunteers were not all that healthy.

Another problem relates to the study's power. Pittler and associates¹ state in the Methods section that there would be a power of 80% with 16 participants, but it is not clear if they recalculated the power on the basis of the 15 participants who actually completed the study. Also, the Methods section does not state the critical estimated scores of the 2 groups. The authors do admit a limitation relating to a possible type II error because of the small sample size. If this type II error was large, the authors are not justified in saying that "artichoke extract does not prevent the signs and symptoms of alcohol-induced hangover over and above placebo."

Frank C. Leung

Retired
Division of Infection and Immunology
Health Canada
Toronto, Ont.

Reference

1. Pittler MH, White AR, Stevinson C, Ernst E. Effectiveness of artichoke extract in preventing alcohol-induced hangovers: a randomized controlled trial. *CMAJ* 2003;169(12):1269-73.

Competing interests: None declared.

DOI:10.1053/cmaj.1040023

[Two of the authors respond:]

We welcome the opportunity to restate important limitations of our study, which we discuss in our paper.¹ Frank Leung's main concern relates to sample size and its implications. The sample size of 16 for a power of 80% was calculated using an estimated standard deviation of 2.0 and an estimated mean difference of 1.5 cm on a 10-cm visual analogue scale. This mean difference was considered adequate in

the expected and confirmed sample of moderately hungover individuals.² Because of the small sample size and the measurement variation, which proved larger than expected, we discuss in our paper the degree of uncertainty relating to the data and state that this might have obscured a possible true effect. Acknowledging the study's limitations and in the absence of any trend in favour of artichoke extract, we stand by our conclusion that "our findings do not suggest that artichoke extract is effective in preventing alcohol-induced hangover."

Max H. Pittler

Edzard Ernst

Complementary Medicine
Peninsula Medical School
Universities of Exeter and Plymouth
Exeter, UK

References

1. Pittler MH, White AR, Stevinson C, Ernst E. Effectiveness of artichoke extract in preventing alcohol-induced hangovers: a randomized controlled trial. *CMAJ* 2003;169(12):1269-73.
2. Collins SL, Moore RA, McQuay HJ. The visual analogue pain intensity scale: What is moderate pain in millimeters? *Pain* 1997;72:95-7.

DOI:10.1053/cmaj.1040153

Taking our vitamins

In Eric Woollorton's article on vitamin and mineral supplements,¹ a footnote to Table 1 states that vitamin K has an anticoagulant effect. In fact, vitamin K promotes healthy coagulation, because it is a cofactor in a carboxylation reaction that is essential for the clotting process.² [A correction on this point was published previously.³ — Editor.]

Vitamin K was excluded from this table because it "is not available in Canadian multivitamin preparations."¹ However, vitamin K is included in some multivitamins available in the United States. Given the popularity of cross-border shopping and the availability of products through the Internet, it is possible that many patients of *CMAJ* readers, or even the journal's readers themselves, are consuming vitamin K in supplement form.

Despite several trials evaluating vita-

min K (vitamin K₁ [phylloquinone] and vitamin K₂ [menatetrenone]) for its effects on bone quality and density⁴⁻⁶ and its usefulness in other contexts,⁶ the toxic effects of even pharmaceutical doses of these 2 naturally occurring forms of vitamin K have not been identified.⁸ In addition, at least one study, which evaluated the effects of large doses of vitamin K₂ (45 mg of menaquinone-4) on hemostatic activation, found no thrombotic tendency at high doses.⁸

Ruth Wilson

Medical Student, Class of 2006
University of Western Ontario
London, Ont.

References

1. Woollorton E. Too much of a good thing? Toxic effects of vitamin and mineral supplements. *CMAJ* 2003;169(1):47-8.
2. Vermeer C, Schurgers LJ. A comprehensive review of vitamin K and vitamin K antagonists. *Hematol Oncol Clin North Am* 2000;14(2):339-52.
3. Corrections. *CMAJ* 2003;169(4):283.
4. Iwamoto I, Kosha S, Noguchi S, Murakami M, Fujino T, Douchi T, et al. A longitudinal study of the effect of vitamin K₂ on bone mineral density in postmenopausal women: a comparative study with vitamin D₃ and estrogen-progestin therapy. *Maturitas* 1999;31(2):161-4.
5. Yonemura K, Kimura M, Miyaji T, Hishida A. Short-term effect of vitamin K administration on prednisolone-induced loss of bone mineral density in patients with chronic glomerulonephritis. *Calcif Tissue Int* 2000;66(2):123-8.
6. Somekawa Y, Chiguchi M, Harada M, Ishibashi T. Use of vitamin K₂ (menatetrenone) and 1,25-dihydroxyvitamin D₃ in the prevention of bone loss induced by Leuprolide. *J Clin Endocrinol Metab* 1999;84(8):2700-4.
7. Takami A, Asakura H, Nakao S. Menatetrenone, a vitamin K₂ analog, ameliorates cytopenia in patients with refractory anemia of myelodysplastic syndrome. *Ann Hematol* 2002;81(1):16-9.
8. Fairfield KM, Fletcher RH. Vitamins for chronic disease prevention in adults. *JAMA* 2002;287(23):3116-26.
9. Asakura H, Myou S, Ontachi Y, Mizutani T, Kato M, Saito M, et al. Vitamin K administration to elderly patients with osteoporosis induces no hemostatic activation, even in those with suspected vitamin K deficiency. *Osteoporos Int* 2001;12(12):996-1000.

DOI:10.1053/cmaj.1031201

I commend Eric Woollorton¹ for alerting Canadian physicians to the potential of health risks with excessive consumption of some vitamins and minerals. However, the recommended intakes listed in Table 1 of that article do not reflect dietary reference intake (DRI) values,² which should be used as the dietary standards for Canadians. Furthermore, there is no mention of