Grape Powder Polyphenols and Atherosclerosis Development

Dear Sir:

A recent article by Fuhrman et al. published in The Journal of Nutrition focused on the attenuating effect of grape powder polyphenols on atherosclerosis development in apolipoprotein E–deficient (E<sup>−</sup>) mice (1). The article is currently being highlighted on a number of important websites including the American Society for Nutrition (www.nutrition.org), and the National Library of Medicine and the National Institutes of Health (www.ncbi.nlm.nih.gov).

The title and findings described in the article are indeed interesting and attractive. However, I was puzzled by the description of the animal study, which states:

The mice received their standard, nonpurified diet, supplemented for 10 wk (via their drinking water) with the following: the control group received tap water; the placebo group received a 1:1 mixture of glucose and fructose, 10 g/L; and the grape powder group received 30 mg grape powder/d, equivalent to 150 μg of total polyphenols/d. (p. 723, column 1, lines 1–6)

If the statement is correct, the findings that the administration of grape powder in water resulted in less severe atherosclerotic lesions in apolipoprotein E<sup>−</sup> mice and reduced macrophage atherogenicity may or may not be due to the grape polyphenols as the authors implied. This is because the major polyphenols in grape powder such as quercetin and resveratrol (p.723, column 2, Table 1) are practically insoluble in water (2–4). The first 3 sentences of the second paragraph of the Methods section support this view:

Grape powder was dissolved in water at a concentration of 10 g/L. The suspension was stirred using a magnetic stirrer for 5 h at room temperature. Then the suspension was left overnight at 4°C so that the insoluble materials would settle. (p. 723, column 1)

Although the solubility of grape powder polyphenols in water is likely higher due to their presence as glycosides or other forms (5–7), information concerning the concentrations of individual polyphenols in the reconstructed drink, in relation to that of the original grape powder, remains critical. This information will allow for positive confirmation of the important role reported for grape powder polyphenols in the development of atherosclerosis (1). On the other hand, it would also be of interest and of importance if the yet to be identified water-soluble polyphenols or other compounds present in the grape powder also play a role in the inhibitory effect on the development of atherosclerosis. Due to the potential effects that this article may have or already has had, a clarification of this issue is urgently needed.

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Literature Cited

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