Inadequate Vitamin B-12 Intake May Be a Problem Not Just for a Small Number of Adventist Vegans

To the Editor:

Rizzo and colleagues reported nutrient intake among individuals from the Adventist Health Study-2 (AHS-2).1 In the Discussion section, the authors stated, “...low intakes of vitamin B-12 and D are of concern for a small proportion of Adventist strict vegetarians in the United States, as can be seen in the very low intakes at the 5th percentile.” In making this conclusion, the authors did not take into consideration important research findings. Bor and colleagues estimated that intake of 4 to 7 μg/day of vitamin B-12 was associated with adequate vitamin B-12 status.2 In another study by Bor and colleagues, it was estimated that “A daily vitamin B-12 intake of 6 μg appears to be sufficient to normalize all of the vitamin B-12-related variables, which suggests that this dose might be more adequate for the general adult population than the current Recommended Daily Allowance of 2.4 μg.”3 Tucker and colleagues, in a Framingham Offspring Study, showed that plasma vitamin B-12 concentration showed “clear and strong increase” with intake up to 10 μg/day of vitamin B-12.4 Kwan and colleagues showed the leveling off plasma vitamin B-12 concentration at intake of 7 μg/day.5 Most recently, Doets and colleagues reported, “Daily vitamin B-12 losses in apparently healthy adults and elderly probably range from 1.4 to 5.1 μg. Vitamin B-12 intakes needed to compensate for these losses seem to range from 3.8 to 20.7 μg.”6

The median intake of B-12 among Adventist vegans was 6.3 μg (Table 2 of Rizzo and colleagues’ article). Thus, about 50% of them had a lower intake. While the 6.3 μg is somewhat higher than the current Recommended Daily Allowance for adults (2.4 μg), the aforementioned studies showed that the Institute of Medicine’s recommendation has been underestimated.7 Furthermore, the majority of participants (~53%) in the Rizzo and colleagues’ study were 55 years of age or older (20% were 70 years or older). Many of these individuals may require much higher doses of vitamin B-12 due to age-related absorption problems that are common in older adults and elderly people.

Lacto-ovo-vegetarians, pesco-, and semi-vegetarians in the < 5th percentile had an intake of just 1.5, 1.6, and 1.6 μg, respectively.7 Their median intake was only slightly higher than median intake of vegans. Thus, a number of individuals in these diet groups are more than likely at high risk of B-12 deficiency.

The above conclusions are supported by results of vitamin B-12 deficiency assessments based on a subgroup of the AHS-2. Haddad showed that >45% of vegans, >30% of lacto-ovo-, >32% of pesco-, >31% of semi-, and close to 34% of non-vegetarians had elevated homocysteine level.8 The prevalence of deficiency based on serum B-12 concentration ranged from 13% to 43% for vegans, 9% to 39% for lacto-ovo-, and 6% to 39% for nonvegetarians, depending on criteria for deficiency cut off.

The authors’ conclusion is not supported by the AHS-2 data and it is inconsistent with the most recent research findings.

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Authors’ Response:
The authors are happy to reply to Dr Pawlak. Pawlak suggests that vitamin B-12 intakes should be above the Dietary Reference Intakes (RDIs) that are currently held by the Food and Nutrition Board, Institute of Medicine.1 Pawlak quotes a number of studies that would indicate the appropriateness of higher intake levels than those currently provided by the RDIs. This is an interesting point and will certainly need consideration. However, the scope of the manuscript was not to discuss which intake levels were the most appropriate, but to compare the intake levels found in the five distinct dietary patterns. In the Discussion, we referred to the most recent RDIs as they represent a consensus statement and are used currently as a point of reference. It is true that any such consensus needs to be critically reevaluated and

References

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