

# Response to Letter: Insufficiency of B vitamins with its possible clinical implications

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Onishi and Ishida have commented on our recent review<sup>(1)</sup> that vitamin B<sub>1</sub> deficiency is a health problem in cancer patients. Our review, however, has by no means focused on the secondary causes of vitamin deficiency, but is intended to review the significance of vitamin deficiency/insufficiency from the viewpoint of public health with the hope to be of help for the future determination of Dietary Reference Intakes (DRI), which proposes reference values of desirable dietary intake of energy and nutrients for Japanese people to maintain and promote their health status. Our scope is that primary vitamin deficiency disease such as beriberi and rickets have now become far less common, but even vitamin insufficiency, milder than deficiency, is a significant risk for various diseases, and of great societal importance.<sup>(1)</sup>

There have been numerous reports that various diseases can be the secondary causes of vitamin deficiency/insufficiency. For example, we have reported the high prevalence of vitamin D, vitamin K, and vitamin B<sub>12</sub> deficiency/insufficiency in patients

with inflammatory bowel disease (IBD) due to malabsorption.<sup>(2,3)</sup> Other examples include vitamin B<sub>12</sub> deficiency due to malabsorption in patients after gastrectomy,<sup>(4)</sup> and vitamin C deficiency in critically ill patients due to markedly increased requirement.<sup>(5)</sup> Regarding vitamin B<sub>1</sub> deficiency, various risk factors have been reported including alcoholism, malnutrition, refeeding syndrome, bariatric surgery, other gastrointestinal tract surgery, critical illness, diabetes mellitus, obesity, hyperemesis gravidarum, chronic kidney disease on dialysis, cancer, furosemide intake, and acquired immunodeficiency syndrome.<sup>(6)</sup> Additionally, vitamin deficiency can also be caused by the therapeutic drugs; i.e., vitamin B<sub>12</sub> deficiency due to anti-diabetic drug; metformin,<sup>(7)</sup> and multiple vitamin deficiencies by anti-epileptic drugs.<sup>(8)</sup>

Summarizing our reply, vitamin insufficiency is a serious risk for various diseases and its correction is of great importance in the prevention of various diseases, and the significance of secondary causes of vitamin deficiency is to be separately studied.

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