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Letter to the Editor

Letter to original article by Kaplan et al. 2018 - Protein bioavailability of Wolffia globosa duckweed, a novel aquatic plant, A randomized controlled trial

Kaplan et al. [1] conducted a randomized controlled human study to compare bioavailability of nutrients from a strain of *W. globosa*, called Mankai, to soft cheese and peas.

The vitamin B12 concentration, in case of Mankai, was reported to be 2.81 μg per test meal (Table 1). As described in the footnotes, the analysis was performed by Eurofins labs. However, detailed description of the method used for determination of vitamin B12 is not available in the methods section. Plants contain a large spectrum of corrinoids and an analytical differentiation between active and inactive corrinoids is challenging. Interestingly, Watanabe and Bito [2] investigated cobalamin compounds in foods and found a high proportion of pseudo vitamin B12 compounds in plant foods.

Moreover, the vitamin B12 content of test meals containing Mankai was higher than that of test meals with soft cheese (Table1). It is important to state here that dairy products are a well-known natural source of active vitamin B12. Considering the results presented by Watanabe and Bito [2] there is a probability that the ones analyzed in Mankai, with the method used, were pseudo vitamin B12 or inactive corrinoids.

In the clinical studies concerning determination of vitamin B12 in blood, competitive electrochemiluminescent immunoassay "ECLIA" (Cobas 8000, Roche Diagnostics, Mannheim, Germany) was used. However, this assay cannot differentiate cobalamins from inactive corrinoids.

In the present report, the serum concentration of vitamin B12 did not change significantly from baseline values after 180 min, but the differences between the Mankai group verses the soft cheese group as well as the green peas group were significant. The variation in and between the subjects was very high. The results presented in this section are not in coherence with those in Table 1. The decrease of serum vitamin B12 concentration after consumption of the soft cheese test meal (Table 3) are not plausible because vitamin B12 content in soft cheese test meal was 1.16 μg. Likewise, the increase of vitamin B12 concentration after intake of green peas is also not acceptable, as green peas test meal did not contain vitamin B12 (Table 1). The vitamin B12 concentrations present a high standard deviation, which underlines the analytical challenges involved herein.

The authors hypothesize that the presence of vitamin B12 in Mankai is because of its association with endophytic bacteria. The identification of these bacteria and basic characterization of their role, if any, in pathogenesis in humans is the minimum requirement from a scientific point of view, as Mankai is planned to be used for human nutrition.

In our opinion, the authors' conclusion that Mankai is a potential bioavailable source of vitamin B12 is premature and further research in humans is of urgent need to draw the right conclusions.

References

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