Intake of *Chlorella pyrenoidosa* lowers serum methylmalonic acid levels in vegetarians with a suspected vitamin B12 deficiency.

Published in *Journal of Medicinal Food* (18[12], 2015)

[Objectives]

Vitamin B_{12} is an essential nutrient that contributes to the maintenance of normal neuronal function and blood condition. Because vitamin B_{12} is available only in animal products, vitamin B_{12} deficiency has commonly occurred in vegetarians and caused elevated serum methylmalonic acid (MMA) levels. Vitamin B_{12} deficiency may be associated with megaloblastic anemia and gastrointestinal diseases.

Vegetarians are recommended to take vitamin B_{12} as supplements to prevent vitamin B_{12} deficiency. However, some supplements contain an inactive form of vitamin B_{12}. Recently, *Chlorella pyrenoidosa* (hereafter, "*Chlorella*") has also been shown to contain vitamin B_{12}, although the effect of vitamin B_{12} contained in *Chlorella* on humans remains unknown. Thus, we assessed the effect of *Chlorella* in vegetarians.

[Methods]

Seventeen vegetarians with higher serum MMA levels took 9 g of *Chlorella* (21 μg of vitamin B_{12}) daily for 60 days, and their serum vitamin B_{12} and MMA levels were monitored.

[Results]

The serum vitamin B_{12} levels of all subjects showed an average increase by 21% on day 30 and 27% on day 60 as compared with those at the start of the study (Fig. 1).

The serum MMA levels of all subjects showed an average decrease by 32% on day 30 and 34% on day 60 as compared with those at the start of the study (Fig. 2).

In addition, serum MMA levels were increased in 8 subjects after *Chlorella* intake 60 days followed by cessation of *Chlorella* intake 30 days.

On the basis of these results, it was suggested that vitamin B_{12} contained in *Chlorella* exerts an effect in humans after being absorbed by the body and thus that *Chlorella* intake is useful in overcoming vitamin B_{12} deficiency.

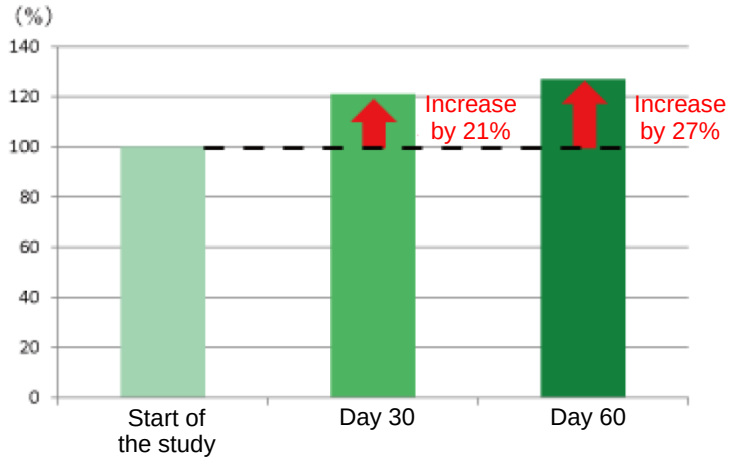

Fig. 1 Rate of change in serum vitamin B_{12} levels due to *Chlorella* ingestion

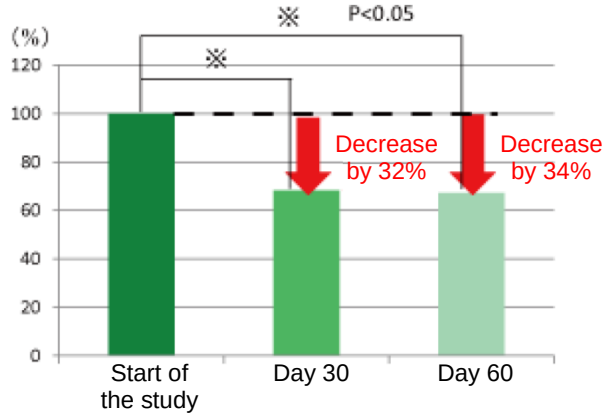

Fig. 2 Rate of change in serum methylmalonic acid levels due to *Chlorella* ingestion

<<Details>>

Journal:	*Journal of Medicinal Food, 18(12), published on December 17, 2015*
Title:	Nutritional Supplementation with *Chlorella pyrenoidosa* Lowers Serum Methylmalonic Acid in Vegans and Vegetarians with a Suspected Vitamin B12 Deficiency
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