



Organic fermented carrot rich in vitamin B12

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What is vitamin B12?

Discovered during the 20th century, the Cobalamin (also called Vitamin B12) is an essential nutrient in the human diet, playing a key role in the production of red blood cells and in the proper functioning of the nervous system. Vitamin B12 is one of the water-soluble vitamins. Its name, cobalamin, originates from the cobalt atom that it contains in its structure.

The main natural sources of Vitamin B12 are food of animal origin: meat, fish, eggs etc... thus the Vegan, veggie, vegetarian populations or people who have reduced their consumption of animal foods for health reasons are likely to be subject to mild or severe B12 deficiency. Even Non-Vegan people, with a "low animal diet" can be concerned by such deficiency. This is why the B12 deficiency is recognized one of the most frequent deficiency worldwide.



What are the symptoms of vitamin B12 deficiency ?

Deficiency in Vitamin B12 usually leads to a disorder call "pernicious anemia" and an impressive number of symptoms such as, weakness, tiredness, or lightheadedness, heart palpitations and shortness of breath, pale skin, a smooth tongue, constipation, diarrhea, loss of appetite, or gas, nerve problems like numbness or tingling, muscle weakness, and problems walking, vision loss....

In addition, anemia may take several years to develop after the onset of deficiency, because large quantities of vitamin B12 remain stored in the liver.



Some bibliographic references

Epidemiology of vitamin B12 deficiency by Tekin Guney, Aysun Senturk Yikilmaz and Imdat Dilek. DOI : 10.5772/63760

Vitamin B12 in the blood of grazing cobalt deficient sheep by Andrews E.D., Stephenson B.J. N.Z.J. Agric. Res. 9. 491-495

Vitamin B12: plant sources, requirements, and assay by Victor herbertr (1988). American Journal of Clinical Nutrition 48 (3 suppl): 852-8. PMID 3046314.

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What about supplementation?

Food supplements containing “synthetic Vitamin B12” are widely spread on the health and nutrition market; usually claiming 1000% of the recommended daily intake of Vitamin B12...so called “cyano-cobalamin”.

What does that mean ? The cobalamin is the “heart” of the Vitamin B12; Naturally, the cobalamin is present in 3 forms : Adenosyl / Methyl / Hydroxo-cobalamin which are not very stable forms. To take these forms stable cyanide is used to create the synthetic vitamin B12: cyanocobalamin!

For many years there was confusion that cyanocobalamin was identical to vitamin B12 and that it was its natural form. In fact, cyanocobalamin was derivated from the contamination of activated carbon used in vitamin B12 isolation processes. Cyanocobalamin does not occur naturally in the body or in the diet in any measurable quantity. Following this disconcerting discovery, the chemical industry continues to use this production process to stabilize cobalamin with... cyanide!

Thanks to an innovative fermentation process of organic carrots, **we offer a 100% natural source of vitamin B12**, without cyanide!

What about our natural and organic vitamin B12?

We assume that, Vegans, Vegetarians or “low animal diet” people are consumers who take care of what they eat, aware of the consequences of their diet on their health.... Knowing the B12 they eat is stabilized with cyanide, would they continue to eat such supplements ?

Esenco started to work on this topic 4 years ago, with industrial and University partners as part of the B Inside Project*. This 4 years research program with more than 1.2 Million Euro total investment** intended to develop new analytical methods of the vitamins belonging to the B family, such as the B12 vitamin, to be able to differentiate real "Natural Vitamins" and to develop new natural ingredients with guaranteed content of vitamins.

Esenco partnered with Laboratoires STANDA, recognised experts in bacterial characterisation, selection, and fermentation process, to develop an innovative ingredient : **Organic fermented Carrot powder, with a guaranteed level of more than 10 microg/g of 100% Natural Vitamin B12 !** This will be the first certified organic solution, produced in France, available for Vegan or Vegetarian formulations! With a recommended daily intake of 2,5micrograms, it is possible to achieve a “source of” claim of Vitamin B12 with less than 40mg of our powder.



* Partners of the project: Université de Rennes 1-CRMPO**, AGROBIO-QUALTECH**, ESENCO**, Laboratoires STANDA & Centre d'Etudes et de Valorisation des Algues**

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