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BlueMe-Fe / BlueMe-Ca / BlueMe-Zn

Imitation of absorption Mechanism in human body

Mineral-BlueMe

BLÜEme
A clean mineral for me

btn
Biotechnology Nature

COMPANY

BTN Co., Ltd. has developed various functional foods and materials in medicine that secured innovative absorption rate and safety based on the world-class mineral stabilization technology.

Mineral products are reviewed due to the demand of 'preventive treatment' against various diseases in the era of aging population but it has disadvantage in low clinical usefulness because of low absorption rate, disturbance of absorption between minerals and side effects.

The "Mineral stabilization biomimetics that imitate the absorption mechanism in human body" invented by BTN Co., Ltd. is our own innovative technology from the creative thinking that resolved stomach disorders and mutual absorption disturbance problem fundamentally through mineral neutral stabilization and absorption mechanism that overcomes the limit of existing products.

In addition, we've developed qualified health functional food which almost plays a role of medicine such as product for oral dry eye syndrome and atopy, based on materials for promoting hyaluronic acid biosynthesis in human body.

Innovative technology of BTN Co. Ltd. is our life science technology learnt from our nature where leads the happiness of mankind and healthy life by developing not only healthy foods and medicine but also nature-oriented animal foods and medicine and medical appliance for transplant biopsy.

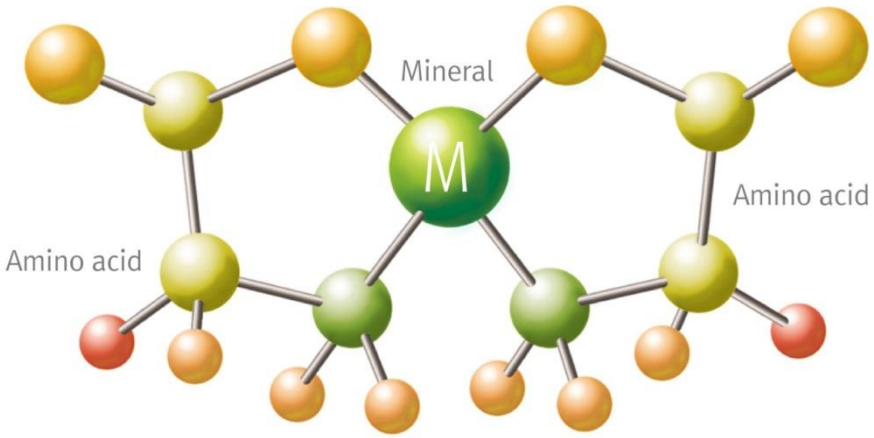
HISTORY

October, 2016, BTN Co., Ltd. was founded
1st Quarter of 2017, Venture company registered, patent application by R&D Center (manufacturing technology of stabilized minerals)
2nd Quarter of 2017, First Step Technology Development (Small Business Department), 6-Month Challenge Platform (Creation Center)
Local business R&D project (CTP-companion animal) Trade mission (Russia), Overseas exhibition (Vietnam)
3rd Quarter of 2017, Rapid commercialization project (CTP), R&D planning project (Small Business Department) ISO 9001, ISO 14001 certification

Mineral-BlueMe

It is a bio-environment mimicry technology that implements pure neutral bonding between amino acid and minerals by mimicking the binding characteristics and environment in the body where the minerals are carried and stored by the protein.

“Pure neutral bonding of mineral-BlueMe realizes perfect molecular structure stabilization.”



[[Stabilized pentagonal structure of Mineral-BlueMe]

That is, the carboxyl group (COO-) of each amino acid forms an ionic bond with the + charge of the mineral, and the alpha amino group (NH) of the amino acid has a structure sharing two electrons in the empty outermost electron orbit of the mineral ion, and at this time it has two ring structures of the most stable pentagonal shape.

In addition, the pure amino acid-mineral bond structure without the use of any chemical additive is a neutral minerals with no charge, which fundamentally solves many problems derived from absorption and metabolism of existing minerals.

Mineral-BlueMe

It is a unique new technology to produce pure amino acids - minerals through precise reaction control at the molecular level where no substances or reaction byproducts are added to amino acid-mineral neutral bonds.

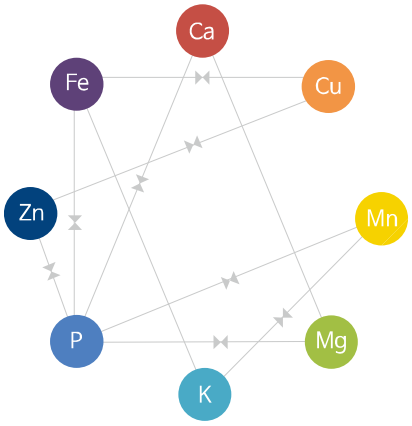
"Clean pure amino acids - minerals" without byproducts / additives”

Beginning with the discovery of the scientific principle to hydrate the natural seaweed calypso, we have developed natural technologies to obtain the most stabilized mineral-BlueMe from a number of variables such as the type of amino acid, the composition ratio of minerals and amino acids, reaction time, temperature, pH, amino acid R group PKa constants.and so on. We have developed the world's first natural reaction condition technology that has no added substances or reaction by-products other than amino acids and minerals in aqueous solution. On the basis of this science and technology, we were able to go beyond the limit of absorption of all minerals.
Mineral-BlueMe is surrounded by amino acids and absorbed using the same process as the amino acid absorption mechanism, so 95% absorption occurs in the villous tissues of the small intestine. Mineral-BlueMe has a dipeptide structure that retains its original shape from ingestion to absorption in the mucous cells of the small intestine and its absorption rate is far superior to that of a single amino acid. Neutral minerals by amino acids do not have unnecessary chemical reactions, which essentially eliminates the problem of gastrointestinal problems caused by side effects during minerals ingestion, such as sedimentation reaction with stimulants and stimulation.

It is actively absorbed quickly through the small intestine, which is an absorption pathway of amino acids, and is the most natural pure amino acid - minerals without gastrointestinal disturbance, interferences such as absorption interference between minerals, and antagonism.

"The most natural pure amino acids - minerals that has hanged stereotypes of the mechanism of absorption"

Mineral-BlueMe is not affected by the absorption competition between minerals that are interfered with absorption by the natural minerals ingested. For example, in the case of iron, the absorption rate is lowered depending on the relative amount at the absorption site due to copper, phosphorus, and potassium. However, since the “BlueMe-Iron" is absorbed as a neutral charge through the absorption path of the amino acid, absorption rate does not change during absorption process of small intestine. Therefore, it is possible to directly and simultaneously recover the body problems caused by deficiency of certain minerals.



Competitive relationship

[Absorption, antagonistic competition between minerals]

Safety

It is created through the control of sophisticated molecular interactions using only natural minerals, amino acids and water..

Mineral-BlueMe is Mineral-N is natural edible materials, so it is safe.

Mineral-BlueMe is formed in the process of being hydrated by intermolecular bonds according to the properties of amino acids and natural minerals, and new additives and by-products are not generated. It is also absorbed into the mucosal cells of the small intestine and then used as an influencing factor of the bound amino acids and the minerals are transported to the tissues in need of replacement by protein and substitution.

Mineral-BlueMe is more than 10 times safer than conventional minerals even when overdose.

In the case of iron, “BlueMe-Iron" has an absorption rate of 3.7 times higher than FeSo4, which is inorganic iron, and 2.6 times higher than FeSo4 in LD50 using Rat. Therefore, it has a safe margin even when overdose 10 times (3.7x2.6) or more.

Compound	mg/kg	Fe mg/kg
BlueMe-Fe	5000	825
Fe SO_4	868	319

[Comparison of LD50 between BlueMe-Fe and FeSo4]

The remaining storage mineral-BlueMe in the small intestinal mucosa cells are excreted 3-4 days following the death of the mucous cells.

Mineral-BlueMe does not cause over-accumulation in the body even after long-term use.

Mineral-BlueMe may generate over-accumulation in the body when taken for long periods due to high absorption rate. But our precise control of the body has the ability to excrete extra minerals. In the case of iron, “BlueMe-Fe" is absorbed into the mucous cells of the small intestine several times faster than other materials. The absorbed “BlueMe-Fe" is hydrolyzed and separated from the amino acid, which binds to the transferrin protein Transferrin in the cell and moves through the blood to the tissue that needs iron.

Extra iron that is not associated with transferrin is bound intracellularly with the storage protein ferritin, giving iron to the transferrin when the body needs it.

Thus, mucous cells of iron stored temporarily in mucosal cells migrate toward the end of small intestine tissue for 3-4 days to replace the aged cells of the smallest villous tissues, resulting in the natural disappearance of aged cells and excreted through the excretion process. The continuous production and disappearance of these mucous cells is a natural control mechanism of the human body, and the normally absorbed minerals are continuously used and the extra minerals are metabolized in the body. Mineral-BlueMe, with its high absorption rate, supplies the minerals immediately if the body needs it, and does not cause over-accumulation problems in the body.

Mineral-BlueMe does not cause over-accumulation in the body even after long-term use.

Safety

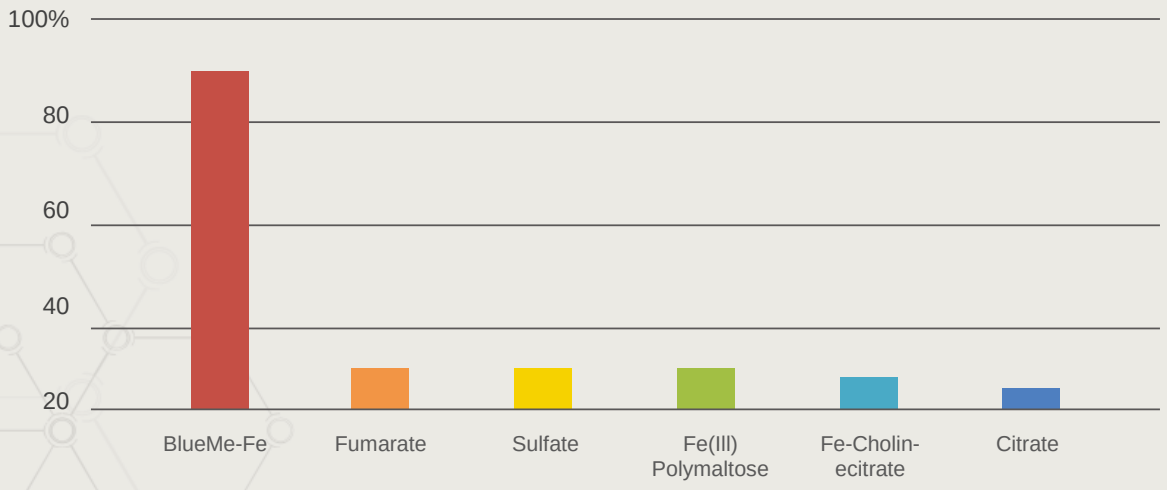
It is a new technology material that can show enough effect by taking small quantity with difference of absorbing mechanism and breakthrough absorption rate.

Mineral-BlueMe is an excellent material that causes little gastrointestinal disturbance.

As a material with a Neutral Charge, Mineral-BlueMe does not cause gastric irritation and does not precipitate by reaction with digestive substances in the gastrointestinal tract. In addition, it does not cause any special side effects, digestive problems or constipation because it has a characteristic that it rapidly enters the body without staying for a long period through a rapid absorption process in the small intestine mucosa.

30 women took 30 mg / day “BlueMe-Fe" with absorption rate of 50% or more and had no other side effects such as digestive problems or constipation.

Mineral-BlueMe group is an FDA-approved technology with Generally Recognized As Safe (GRAS). We are pioneering all new mineral resources through technology that mimics the binding of proteins and minerals in the body and new patent methods that are more advanced than existing products.



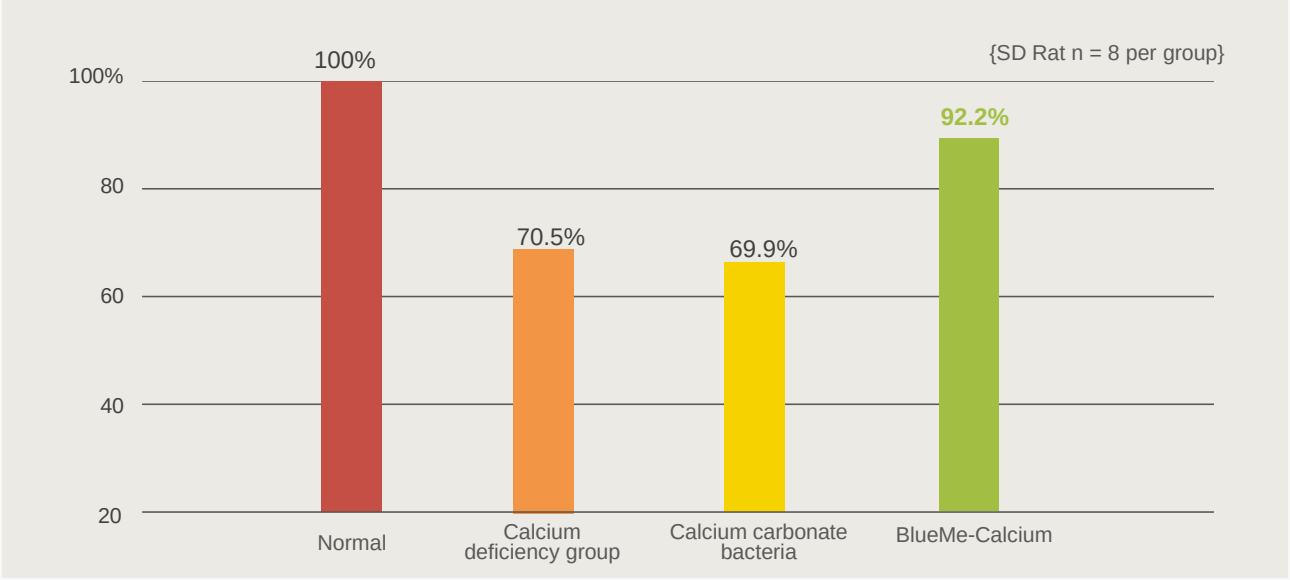
[Difference in the absorption ratio between our “BlueMe-Fe" and conventional iron material]

Mineral-BlueMe “BlueMe-Calcium"

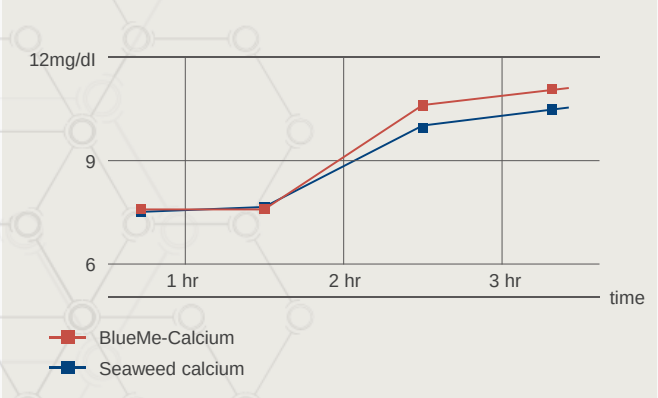
“BlueMe-Calcium" has high absorption rate of over 65% after taken and shows rapid recovery to steady state due to rapid absorption in calcium deficiency state within 2 hours after taken.

Fast absorption and maximum bioavailability of mineral-BlueMe “BlueMe-Calcium

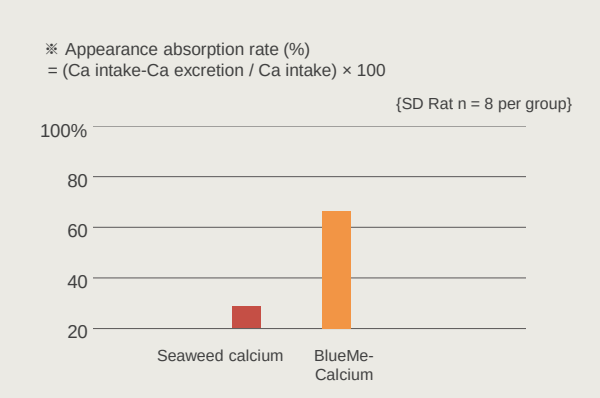
Mineral-BlueMe is formed in the process of being hydrated by intermolecular bonds according to the properties of amino acids and natural minerals, and new additives and by-products are not generated. It is also absorbed into mucosal cells of the small intestine and then used as a nutrient of the bound amino acid. The minerals are replaced with the transport protein and transferred to the necessary tissues in the body.
In the case of “BlueMe-Calcium" out of our mineral-N evaluated by the Korea Food Research Institute, SD Rat was administered for 24 days after calcium-free dietary control, and after the oral administration of BlueMe-Calcium once, concentrations were compared through eyeball blood collection. As a result, unlike the control group, “BlueMe-Calcium" showed a blood calcium concentration similar to that of normal group without calcium deficiency 2 hours after oral administration.



In addition, the amount of calcium absorbed and excreted after 3 days of oral administration in 24-day calcium-deficient experimental animals was measured. As a result, our “BlueMe-Calcium" showed 2.3 times higher absorption rate than seaweed calcium. In other words, “BlueMe-Calcium" showed excellent results that most of the calcium ingested is used in living organisms.



[Calcium concentration in blood after one-time oral administration]



[Appearance Absorption Rate of Calcium]

<Testing and evaluation institution: National Korea Food Research Institute>

Mineral-BlueMe “BlueMe-Calcium"

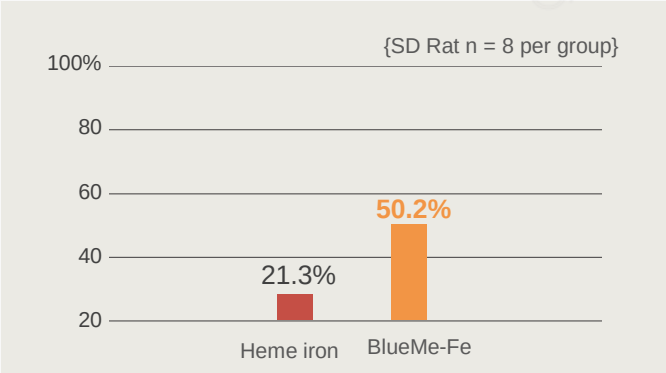
“BlueMe-Fe "has a high absorption rate of 50%. It does not need to take vitamin C at the same time for iron absorption and suggests an effective way to overcome anemia in a short time.

The Challenge of Mineral-BlueMe to Diseases Caused by Poor Mineral Absorption

Deficiencies caused by typical iron absorption disorders cause problems in the role of numerous enzyme activities as cofactors in a vital phenomenon that persisted through the possession of iron in the body of 3.5g and 2.1g of adult men and women, namely oxygen transport in the heme iron form of erythrocytes, enzymatic action involved in energy production and DNA synthesis, synthesis of vitamin A, synthesis of carnitine , Collagen synthesis, immune function with antibody components, elimination of drug toxicity in liver, etc.and cause diseases caused by them.

The work of evaluating the efficacy of our “BlueMe-Fe" and the previously used irons was conducted through an experimental method approved by the Korea Food Research Institute. The evaluation was done by scientific analysis after oral administration for 7 days using SD Rat female animals deficient in iron for 24 days.

“BlueMe-Fe" showed rapid anemia recovery effect after oral administration for 7 days, and showed absorption rate 2 to 3 times higher than conventional iron supplements.



The total amount of iron combined with Transferrin (TIBC), Blood Iron Concentration and changes in transferrin saturation (TS) after 7 days of oral administration

{SD Rat n = 8 per group}

Group	IRON (μg/dl)	TIBC ((μg/dl)	TS (%)
Normal	224.50±33.65a	662.75±17.02c	33.87
Control	96.13±10.27c	841.90±13.90a	11.42
Heme iron	140.8±25.55bc	824.63±11.60a	17.07
BlueMe-Fe	175.2±24.61ab	735.44±9.30b	23.82

Changes in red blood cell (RBC), white blood cell (WBC), hemoglobin (Hb), and HCT concentrations in blood

{SD Rat n=8 per group}

Group	RBC (x10³/㎣)	WBC (x10³/㎣)	HCT (%)
Normal	7.47±0.16ns	6.13±0.50b	44.20±1.43a
Fe-free	6.90±0.20	7.55±0.36a	35.40±1.28b
Heme iron	7.01±0.16	6.12±0.37b	36.11±0.89b
BlueMe-Fe	7.32±0.35	6.02±0.46b	39.33±1.86b

<Testing and evaluation institution: National Korea Food Research Institute>

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