



REVIVE. REVITALISE. RE-ENERGISE.

VITAMIN B DUAL-ACTION
WORKSHOP



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For internal training only

B

REVIVE. REVITALISE. RE-ENERGISE.



ENERGY

Why do we need energy?

We need energy for movement and to carry out essential functions

In our busy lives today, we need to make sure we support our bodies natural energy metabolism throughout the day

So don't let fatigue block your energy

***BLOCK FATIGUE BEFORE IT BEGINS,
STAY ENERGISED***

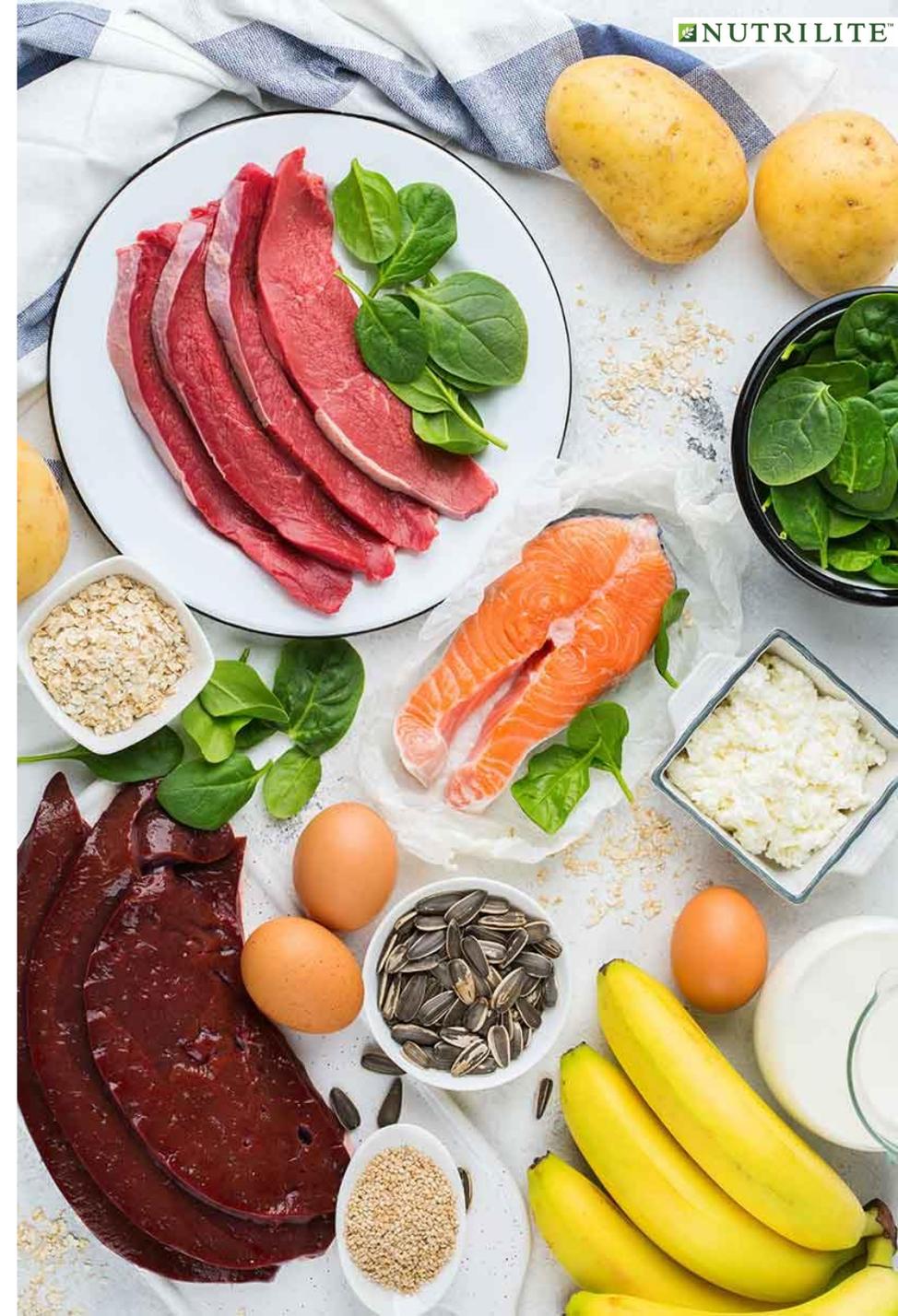




B VITAMINS

B Vitamins are water soluble, meaning they have limited ability to be stored in the body long term and so they **must be continuously replenished by the diet**

Dietary sources include wholegrains, seeds, nuts, legumes, yeast, liver, poultry, green vegetables and dairy products



B VITAMINS

Are a group of eight essential micronutrients

- Thiamin (B1)
- Riboflavin (B2)
- Niacin (B3)
- Pantothenic acid (B5)
- Pyridoxine (B6)
- Biotin (B7)
- Folate (B9)
- Cobalamin (B12)



Together they are called vitamin B complex

They play a major role in converting food into energy

B VITAMINS – MECHANISM OF ACTION



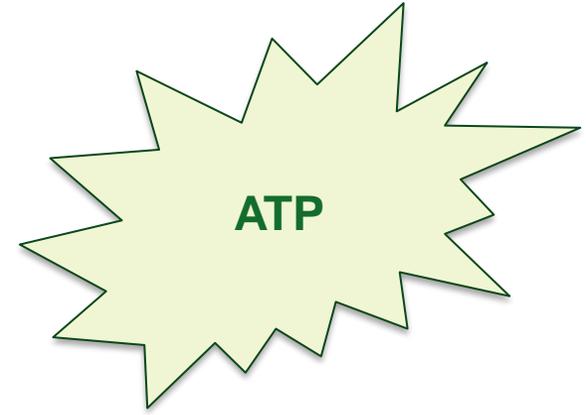
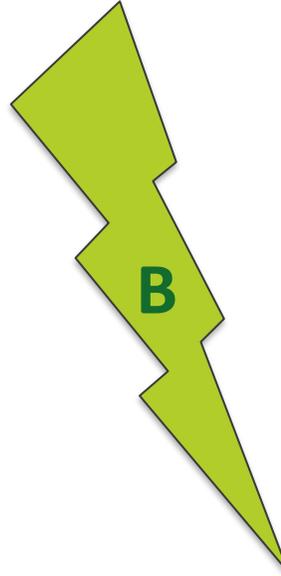
Carbohydrates



Fats



Proteins

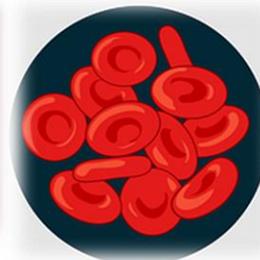


Adenosine Tri Phosphate
=
Cellular Energy

B vitamins act as catalysts in energy metabolism which means, they help break down the food you eat and convert it into cellular energy, ATP

b

VITAMINS : FUNCTIONS



Vitamin B	Functions
B1 (Thiamin)	helps convert food into energy
B2 (Ribloflavin)	helps convert food into energy . Acts as an antioxidant
B3 (Niacin)	plays a role in cellular signaling, metabolism and DNA production and repair
B5 (Pantothenic acid)	helps obtain energy from food and is also involved in hormone and cholesterol production
B6 (Pyridoxine)	is involved in amino acid metabolism, red blood cell production and the creation of neurotransmitters
B7 (Biotin)	essential for carbohydrate and fat metabolism and regulates gene expression
B9 (Folate)	is needed for cell growth, amino acid metabolism, the formation of red and white blood cells and proper cell division
B12 (Cobalamin)	is vital for neurological function, DNA production and red blood cell development

B VITAMINS : FUNCTIONS



B Vitamins also promote healthy skin, hair and nails

Important also in maintaining healthy brain cells,
healthy eyes and other body tissues

In short, essential for our well-being



VITAMINS AND A HEALTHY SKIN



Vitamin B	Functions
B1 (Thiamin)	helps in wound healing
B2 (Ribloflavin)	helps in overall skin structure
B3 (Niacin)	shown to impact the skin as an anti-acne vitamin
B5 (Pantothenic acid)	plays a role in moisture control of the skin so it can reduce dehydration that could lead to dry, itchy skin
B6 (Pyridoxine)	assist in glucose metabolism indirectly ensuring the skin is nourished
B7 (Biotin)	helps in lipogenesis that keeps the skin healthy
B9 (Folate)	plays a role in the maturation of red blood cells
B12 (Cobalamin)	helps in skin pigmentation

B VITAMINS AND MOUTH ULCERS

Mouth sores can be uncomfortable, even painful. Also called canker sores or mouth ulcers, these develop on the inside of your mouth. Mouth ulcers can result from B vitamin deficiencies, so taking vitamin B complex for mouth ulcers may help

Vitamin B enables a higher effective rate and lower recurrence rate, accelerates ulcer healing and shortens the course of treatment

Collectively, vitamin B has a high clinical value in treating patients with mouth ulcers



Clinical efficacy of vitamin B in the treatment of mouth ulcer: a systematic review and meta-analysis

Jing Shi¹, Luyin Wang², Yongshang Zhang¹, Dan Zhi¹

¹Department of Oral and Maxillofacial Surgery, School and Hospital of Stomatology, China Medical University, Liaoning Provincial Key Laboratory of Oral Diseases, Shenyang, China; ²Department of Stomatology, Baoshan Hospital of Traditional Chinese Medicine, Chifeng, China

B VITAMINS AND STRESS

We all deal with stress at some point in our lives, be it physical, mental or emotional



Stress can be positive ,keeping us alert and focused

Stress becomes negative when a person faces continuous challenges and feels overworked

This can affect a person's mood, sleep, food intake and even drain you of energy

THE PANDEMIC STRESS : COVID 19

The World Health Organization named COVID-19, a global pandemic. A pandemic that made us wear more masks, work from home more and gave our immunity more to do

The impact of COVID-19 also created stress as managing it was important : staying positive and healthy to move ahead

The good news is staying positive in managing stress and with a good nutritional back up, connecting with friends and family more, helped many of us manage this pandemic

The basic rules in managing stress :

Rest and relax , move more and stay active , eat healthy

Stay connected with friends and family and enjoy moments of laughter

Thanks to social media made possible in today's lifestyle



B VITAMINS AND STRESS

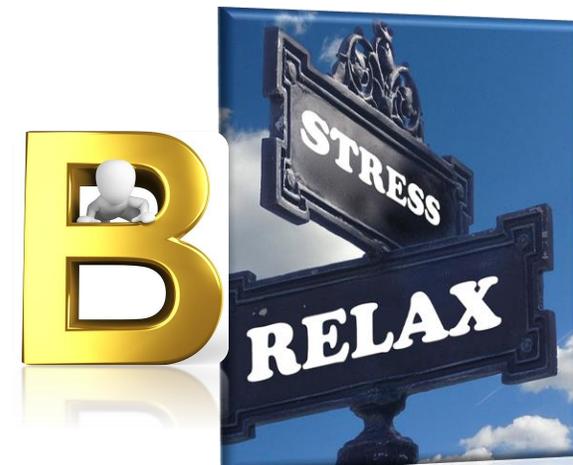
Regular exercise, adequate sleep and good nutrition are some of the best ways to better equip your body to combat stress – the basic rules

B Complex: The anti-stress vitamins as they help to relax your mood and calm the nervous system

Vitamin B5 (Pantothenic Acid) and stress hormone cortisol

The stress-reducing B vitamin, helps support the production of cortisol and other stress hormones

Although cortisol is castigated due to its possible negative impact on the body, some cortisol is necessary for the body to function properly and maintaining adequate amounts of B5 in the body can help regulate the amount of cortisol made



B VITAMINS AND STRESS



In terms of perceived psychological stress, at least three studies have shown that supplementing with B vitamins, for two to 12 weeks, may enhance subjective perception of stress and improve mood

Source :Young LM, Pipingas A, White DJ, Gauci S, Scholey A. A systematic review and meta-analysis of b vitamin supplementation on depressive symptoms, anxiety, and stress: effects on healthy and 'at-risk' individuals. *Nutrients*. 2019;11(9):2232.



B

VITAMINS AND NUTRIENT ROBBERS



SMOKING

Tobacco constituents have been shown to reduce levels of several vitamins of the B-complex in smokers, further compromised by an inadequate diet

Data from the Second National Health and Nutrition Examination Survey indicates that smokers are less likely to consume fruits and vegetables

ALCOHOL

Alcohol can interfere with the metabolism of important vitamins like B vitamins

Alcohol can actually inhibit the absorption and usage of vital b vitamins like thiamin (B1), cobalamin (B12), folic acid (B9) and zinc

B VITAMINS AND LIFESTYLE

HECTIC LIFESTYLE

Our demanding schedules can be a nutrient robber
Skipping meals, grab that fast food, eat on the run, even skipping
breakfast all dietary habits of many



Poor eating habits, increased away from home
meals and improper selection of meals , dieting
can all influence our intake of the b vitamins



B VITAMINS AND FOOD

PROCESSING OF FOOD

Food processing can also reduce the amount of B-group vitamins in foods, like in white flours, white breads and white rice removing the parts that contain the most B-group vitamins



COOKING



Although cooking makes food palatable, it may reduce levels of b vitamins based on cooking methods . Vitamins like thiamine (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), folic acid (B9), and cobalamin (B12) are often reduced during cooking



B VITAMINS AND MEDICATION

Frequently prescribed or over-the-counter medication is known to deplete all or some of the vitamins in the B family

Several antibiotics and nutrient interactions can be detrimental to your nutritional status

Antibiotics can interfere with your ability to absorb critical vitamins, which can lead to additional health problems in nutrient deficiency

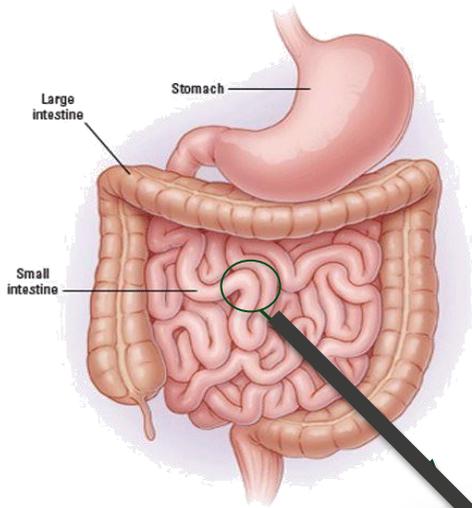
Vitamins that can be depleted by antibiotics include:

B1, B2, B3, B6, B7, B9 and B12

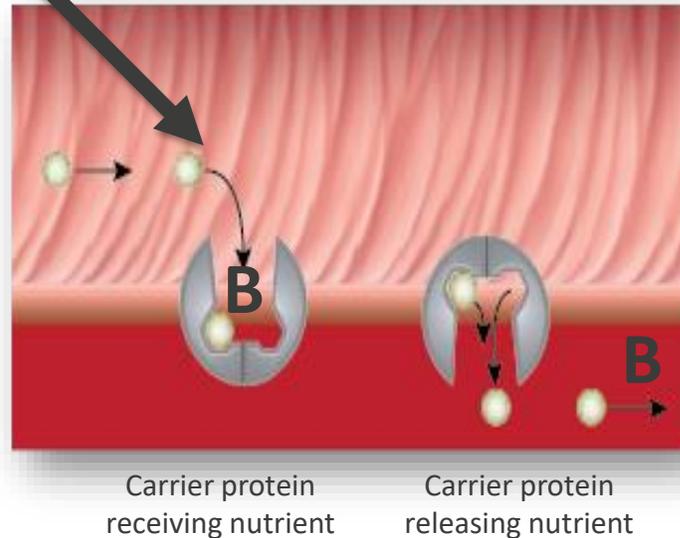


VITAMIN B ABSORPTION

Once you take your vitamin it is first broken down in your stomach, and then sent to the small intestine, where it is absorbed



Carrier Mediated Transport

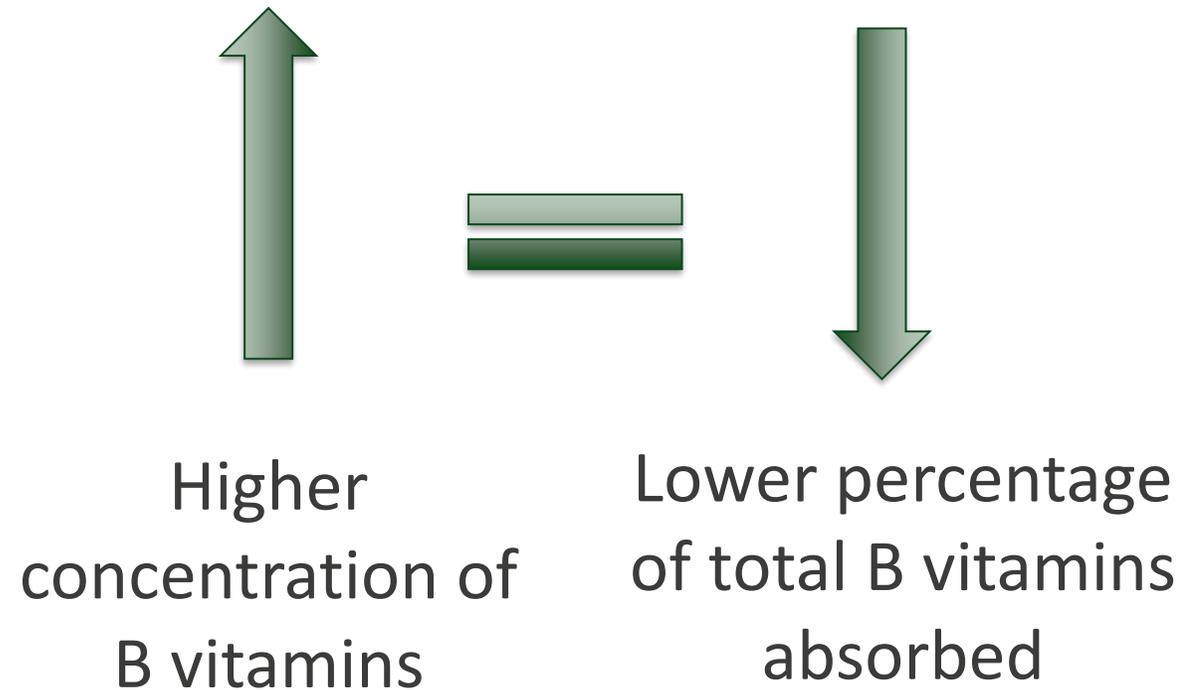


B vitamins are absorbed through protein transport systems in the small intestine (carrier proteins)

Because they can dissolve in water, they leave the body every day in an individual's urine, so you need to make sure you take them daily for continual absorption

VITAMIN B ABSORPTION CHALLENGES

B vitamins are absorbed through saturable transport systems in the intestinal tract, meaning the efficiency of B vitamin absorption is **concentration dependent**

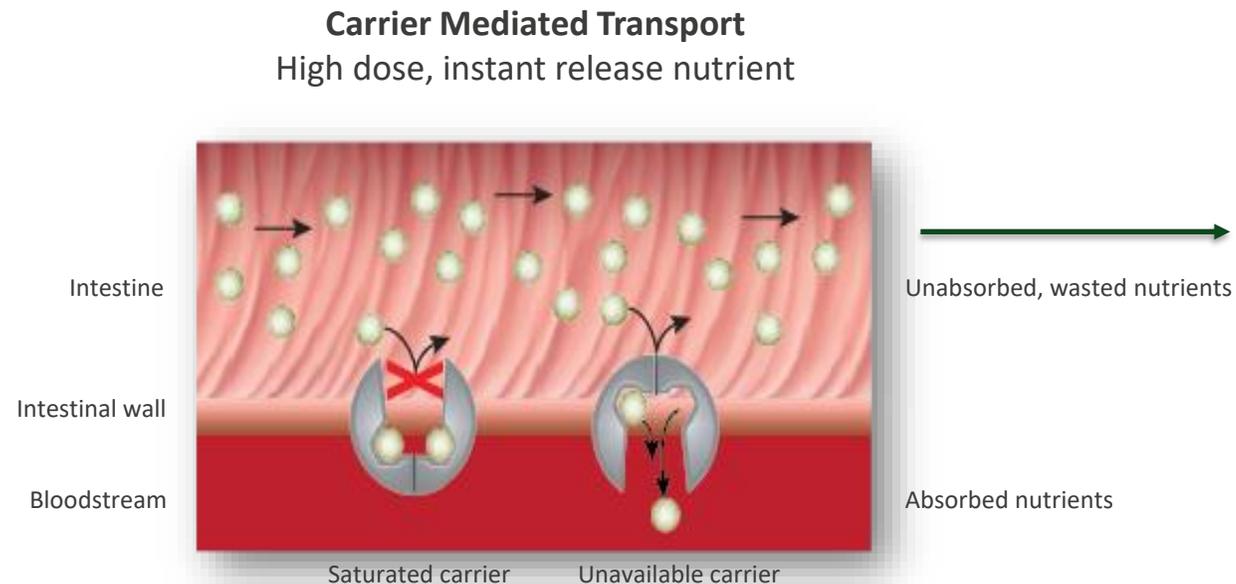


VITAMIN B ABSORPTION CHALLENGES

These transport systems, however, are saturable – meaning they have limits - and can only transport so much at a given time.

When B vitamins are present at high concentrations in the gut, they can exceed the limits of transport systems and vitamins are **not able to be absorbed**

Unabsorbed amounts of the vitamins leave the body through the urine

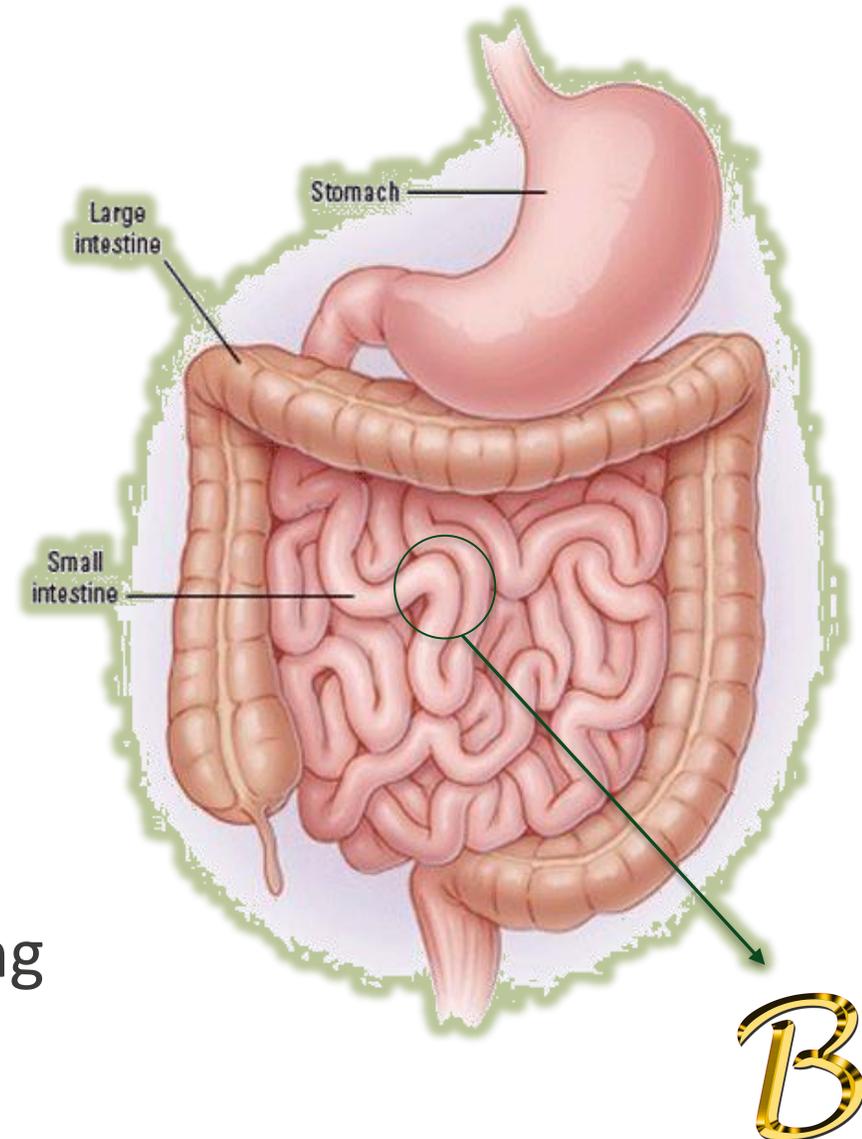


VITAMIN B ABSORPTION CHALLENGES

B vitamins are absorbed through saturable transport systems in the intestinal tract, meaning the efficiency of B vitamin absorption is **concentration dependent**

Some B vitamins **compete** for absorption

B12 must **bind to intrinsic factor** before being absorbed

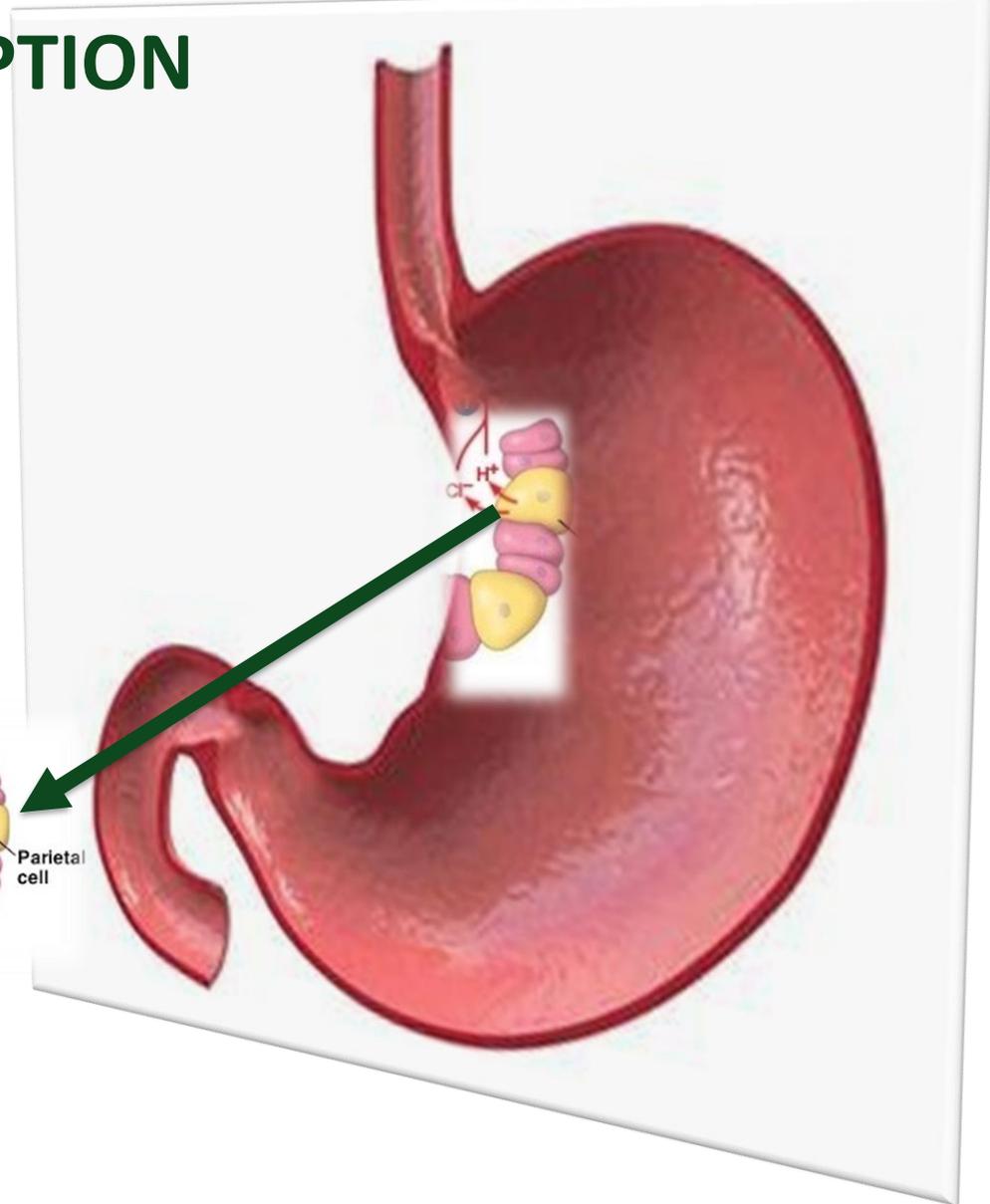
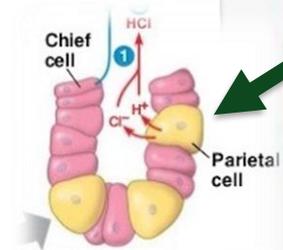


VITAMIN B12 AND ABSORPTION

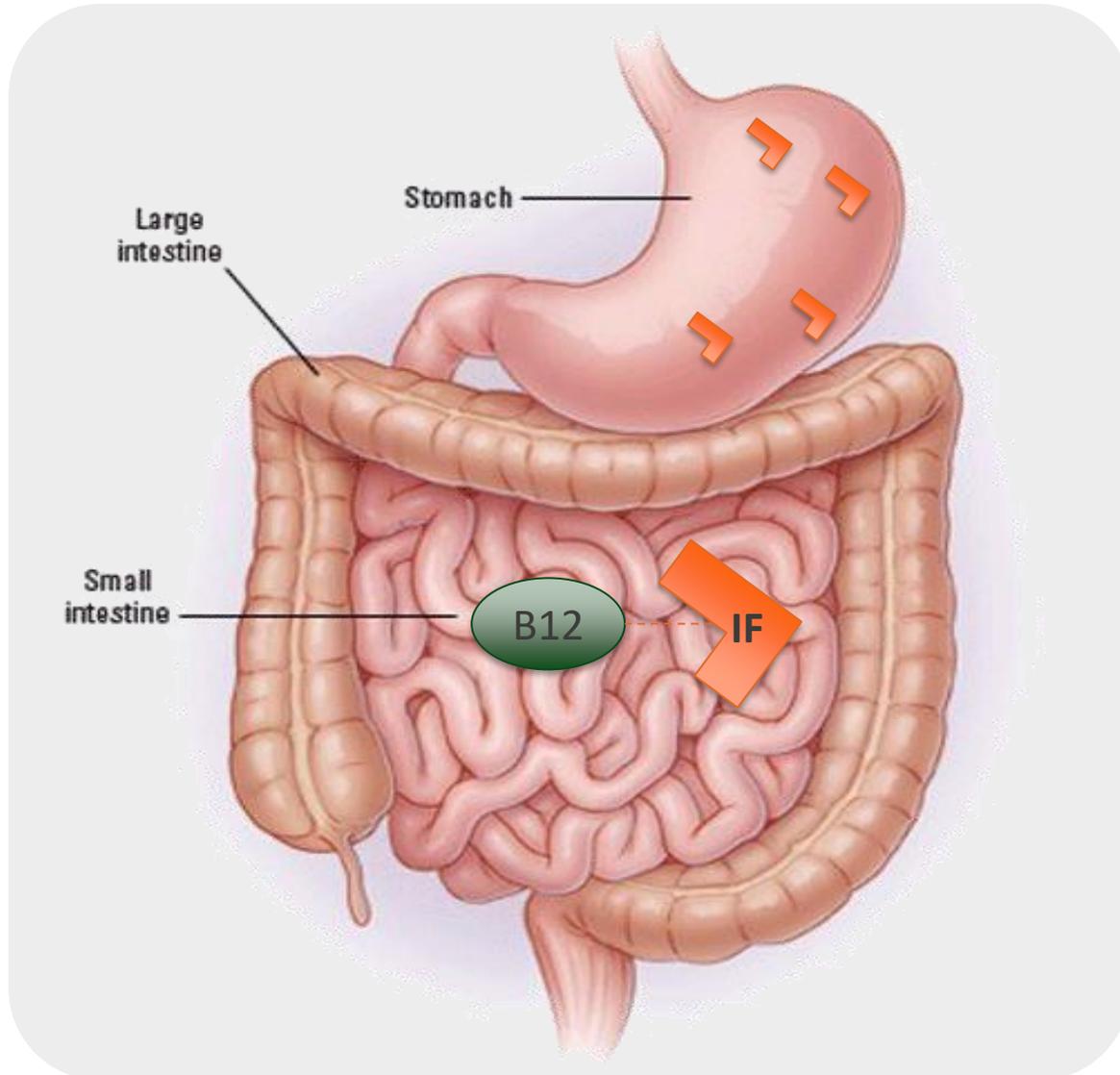
Intrinsic factor (IF), cobalamin binding intrinsic factor, also known as gastric intrinsic factor (GIF)

Is a glycoprotein made by the parietal cells of a healthy stomach lining in humans

IF is necessary for the absorption of vitamin B₁₂

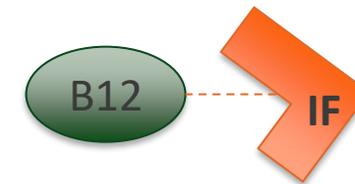


VITAMIN B12 BINDS TO INTRINSIC FACTOR BEFORE ABSORPTION



1. Intrinsic Factor secreted from cells in stomach

2. B12 binds to intrinsic factor



3. B12 is absorbed in the terminal ileum of small intestine

VITAMIN B12 ABSORPTION CHALLENGES

Causes could also include difficulty absorbing vitamin B12 from foods, lack of intrinsic factor (pernicious anemia), surgery in the gastrointestinal tract, prolonged use of certain medication and dietary deficiency

Sources: Stabler SP. Vitamin B12. In: Marriott BP, Birt DF, Stallings VA, Yates AA, eds. Present Knowledge in Nutrition. 11th ed. Washington, DC: Elsevier; 2020:257-71.

Langan RC, Goodbred AJ. Vitamin B12 deficiency: Recognition and management. Am Fam Physician 2017;96:384-9.

Pernicious anemia is a decrease in red blood cells that occurs when the intestines cannot properly absorb vitamin B12

Common causes of pernicious anemia include:

- Weakened stomach lining (atrophic gastritis)
- An autoimmune condition in which the body's immune system attacks the actual intrinsic factor protein or the cells in the lining of your stomach that make it

<https://medlineplus.gov/ency/article/000569.htm>



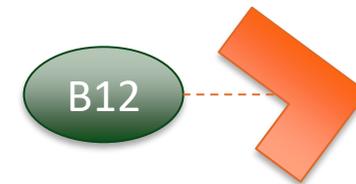
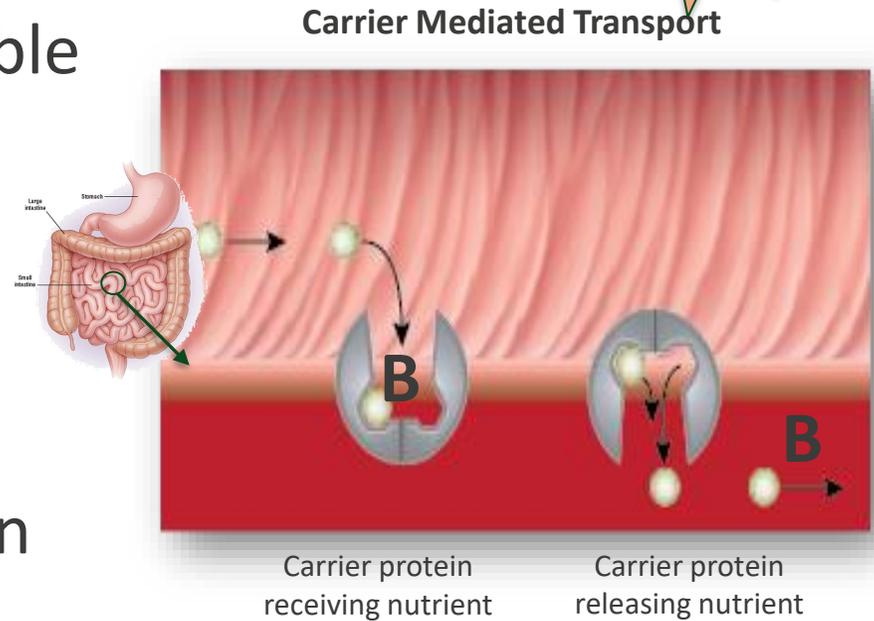
VITAMIN B ABSORPTION CHALLENGES



❑ B vitamins are absorbed through saturable transport systems in the intestinal tract, meaning the efficiency of B vitamin absorption is **concentration dependent**

❑ Some B vitamins **compete** for absorption

❑ B12 must **bind to intrinsic factor** before being absorbed



Considering these **challenges**, there is an **opportunity** to deliver **B vitamins more efficiently**

NUTRILITE VITAMIN B DUAL-ACTION

BEST OF NATURE + BEST OF SCIENCE = BEST OF YOU



Revive. Revitalise. Re-energise.



NUTRILITE VITAMIN B DUAL- ACTION : LABEL INGREDIENTS

	Daily Dose = 1 tab
Thiamin (B1) (mg)	3
Riboflavin (B2) (mg)	3.4
Niacin (B3) (mg)	20
Pantothenic acid (B5) (mg)	20
Vitamin B6 (mg)	4
Biotin (B7) (mcg)	125
Folic Acid (B9) (mcg)	400
Vitamin B12 (mcg)	6
Spirulina Powder	75mg

Other Ingredients:
 Microcrystalline Cellulose, Dried Yeast, Lactose(Milk), Hydroxypropyl
 Methylcellulose, Croscarmellose Sodium, Magnesium Stearate, Silicon
 Dioxide, Glycerol, Carnauba Wax



PLANT BASED HERO INGREDIENT : **SPIRULINA**

If you look at **spirulina** under a microscope, it has a unique and beautiful spiral shape. And it's that spiral shape that gives it its name, **spirulina**

Has a long history of use as a food source

Is a nutrient rich micro-algae that can grow in both salt and fresh water

Rich in **b vitamins** and the plant based phytonutrient **phycocyanin**



PHYCOCYANINS : THE PHYTONUTRIENT IN SPIRULINA

Phycocyanin is very concentrated in spirulina. In fact it can be anywhere from 10-20% of the total protein content in spirulina

When extracted phycocyanins show a brilliant blue colour

It belong to the family phycobiliprotein which is characterized by a deep and intense blue colour (1)

It acts as an antioxidant



NUTRICERT CERTIFIED PARTNER FARM

Location: Sonoran Desert, California, USA

The **spirulina** comes from the partner farm in Southern California using a specially designed pond system

Specially designed pond system

Gentle stirring by giant paddle wheels assures a perfect mixture of fresh water and nutrients





NUTRICERT CERTIFIED PARTNER FARM

Location: Sonoran Desert, California, USA

Intense Environment

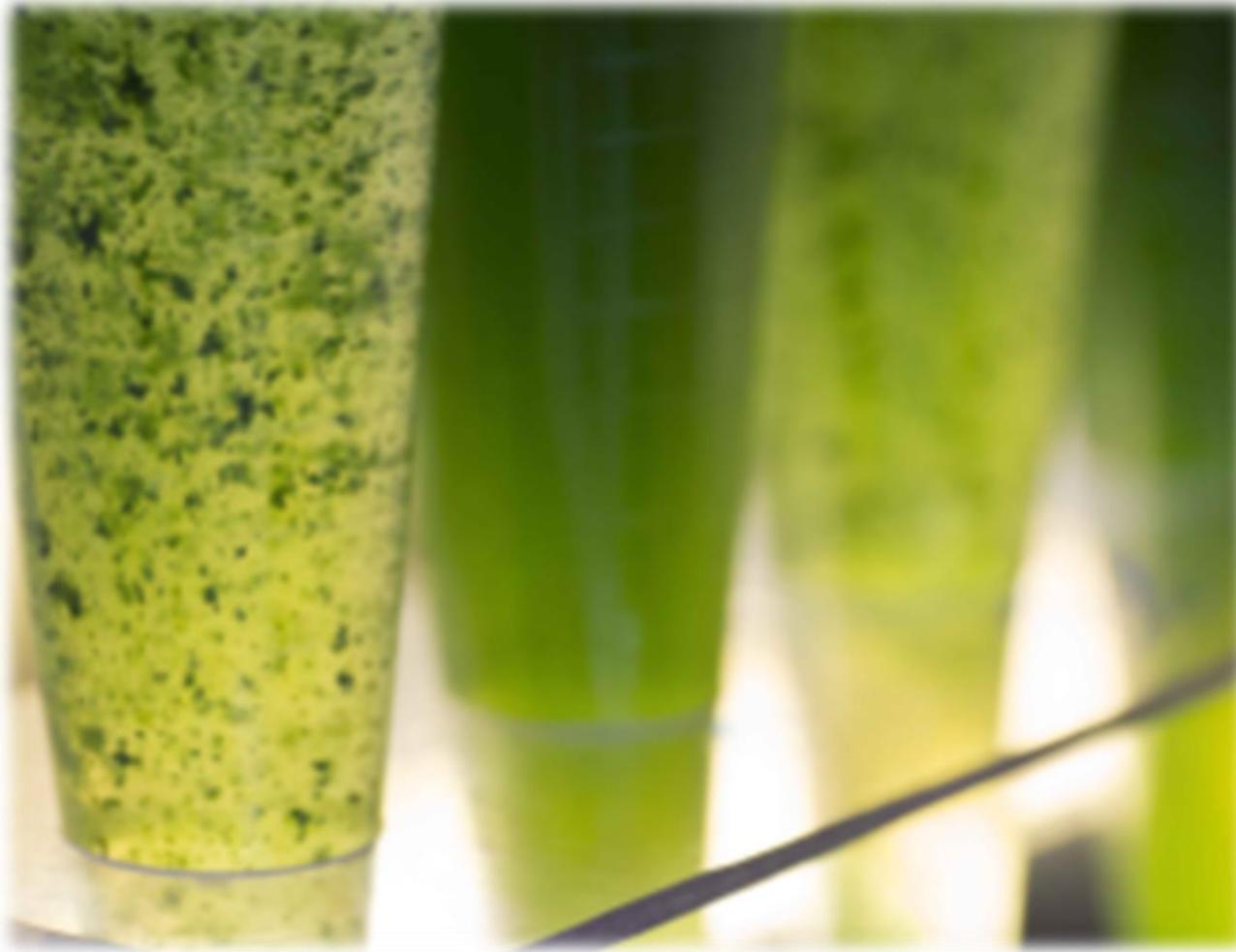
Spirulina grows vigorously in large outdoor ponds in the intense desert sun and high alkaline environment it needs to thrive

Growth is rapid and harvesting can occur daily in peak season



NUTRILITE VITAMIN B DUAL-ACTION

BEST OF NATURE + BEST OF SCIENCE = BEST OF YOU



NUTRILITE VITAMIN B DUAL- ACTION



8 HOUR DUAL-ACTION

Instant & Extended Release
Gentle on the stomach

8 ESSENTIAL B VITAMINS



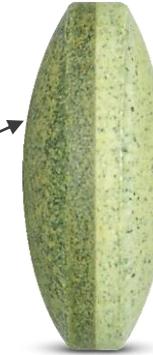
PACKED WITH NATURAL SPIRULINA

ONE PER DAY

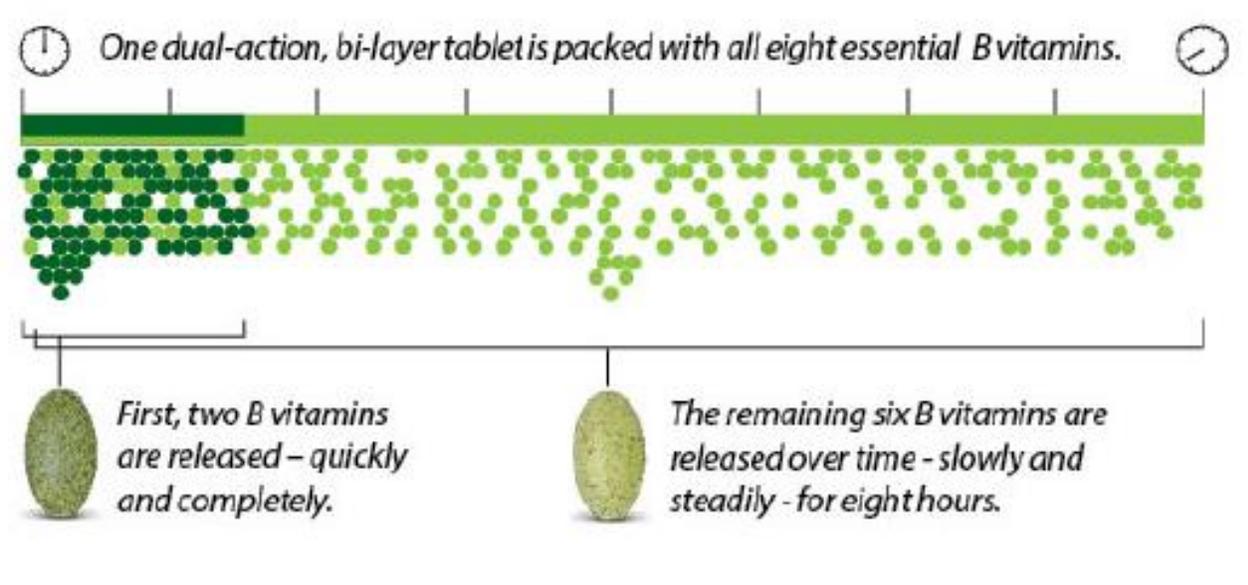
- Convenient
- Easy to swallow
- Bi-layer design

RELEASE TECHNOLOGIES

Instant Release



Extended Release



Bi-layer Tablet Design

The term “bi-layer” simply refers to the unique, physical structure of the tablet. The bi-layer design allows to create a Dual – Action tablet with both instant and extended release technologies

There are 2 distinct layers: a dark green layer and a light green layer

Dark green layer

Instant Release

(B2, B12)



Light green layer

Extended Release

(B1, B3, B5, B6, B7, B9)

For Optimal Nutrient Release of Each B Vitamin

Why a Dual-Action tablet?



Two B vitamins are in the instant release layer:

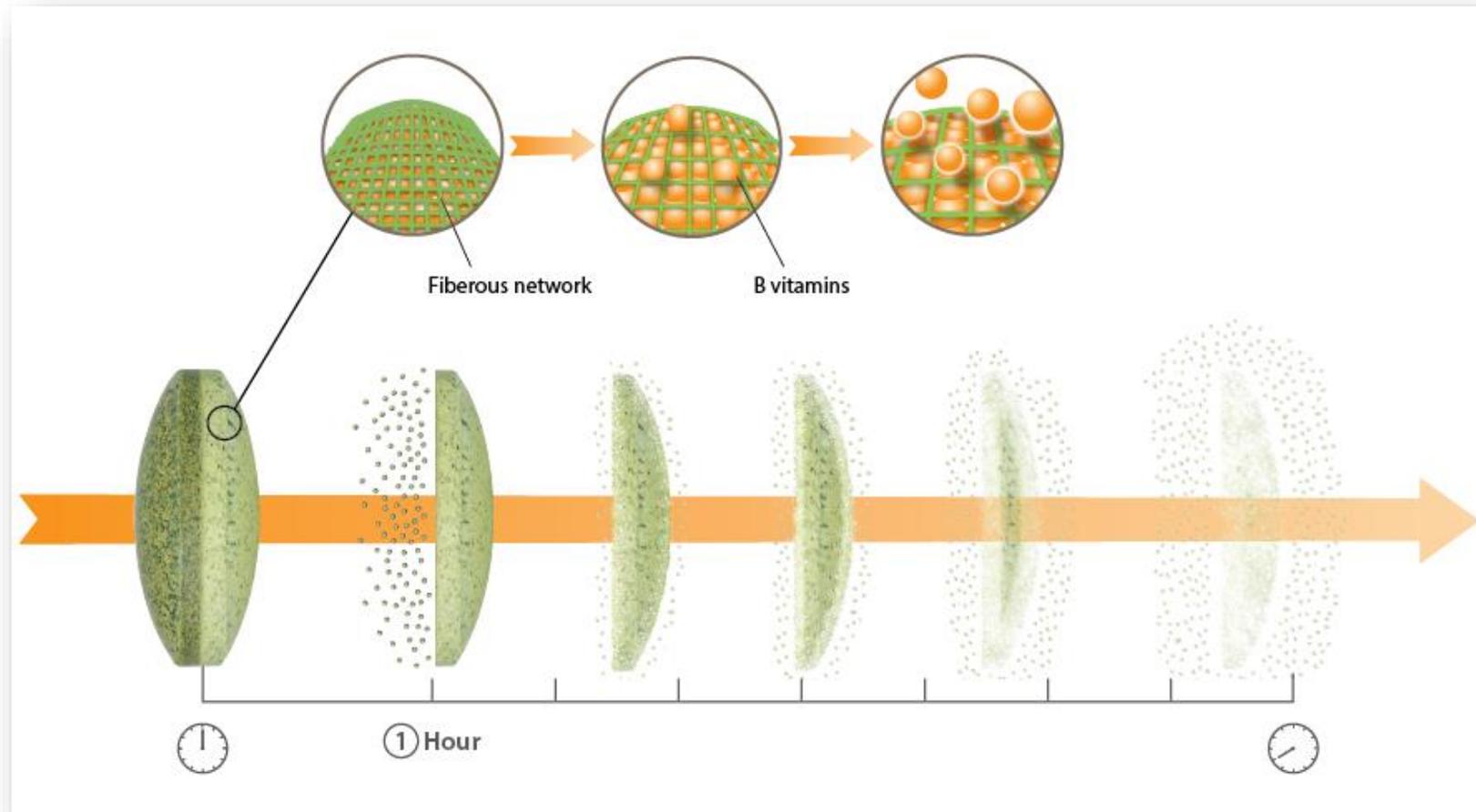
B2 (riboflavin)

- Interference occurred in the extended release layer
- With instant release the absorption rate was unaffected
- B2 is instantly released to the stomach - it is below the level which would saturate B2 active transporters in the gut and is therefore efficiently absorbed unaided by extended release technology

B12 (cobalamin)

- Must bind to intrinsic factor in the stomach for subsequent ideal absorption
- As such, it must be released to the stomach first

EXTENDED RELEASE TECHNOLOGY



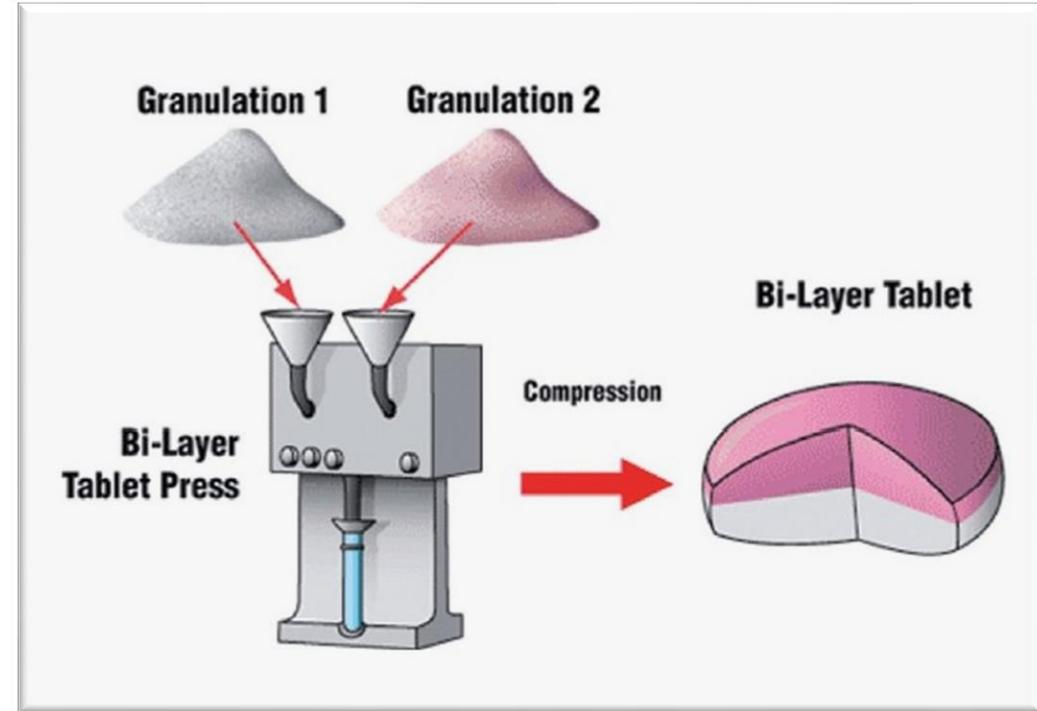
Intact Tablet
 Polymer used:
 HPMC K100M

Initial Wetting
 After ingestion, the
 HPMC polymer begins
 to hydrate and form a
 network (gel)

Expansion of Network
 Water permeates into
 the tablet, increasing the
 gel layer

B vitamins Slowly Released
 The B vitamins are released
 slowly via diffusion through
 the gel layer

Bi-Layer Technology



WHAT SCIENTIFIC EVIDENCE IS THERE TO SUPPORT THIS PRODUCT?



The B vitamins are absorbed through saturable transport systems in the intestinal tract, meaning the efficiency of B vitamin absorption is dose-dependent.

For these reasons, NUTRILITE™ Vitamin B Dual- Action has been designed to release six essential B vitamins over eight hours to provide optimal nutrient absorption

Physiological modeling of the release profile in the human intestine combined with absorption experiments demonstrate that NUTRILITE™ Vitamin B Dual-Action technology allows six B vitamins to be released at a slow and steady pace in the gut

This slow release guards against the transporters in the gut from being saturated, allowing efficient absorption and limiting waste associated with large doses





WHAT SCIENTIFIC EVIDENCE IS THERE TO SUPPORT THIS PRODUCT?



When vitamin B blood levels are below the kidney's threshold, they undergo reabsorption, allowing the transporters to pump the vitamins back into the blood to maintain appropriate serum levels

When vitamin B blood concentrations exceed the renal threshold, the nutrients are rapidly excreted through the urine



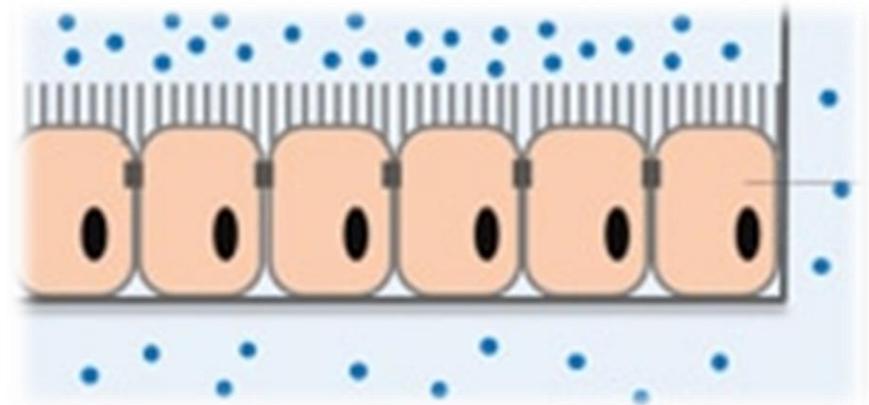
The **nutrient levels in Vitamin B Dual – Action limit overloading** the renal threshold, **minimizing** waste associated with excretion and allowing **for more effective utilization** of B vitamins within the body

BEST OF SCIENCE EXPERIMENTATION

In order to test the formula the Nutrilite scientist tested :

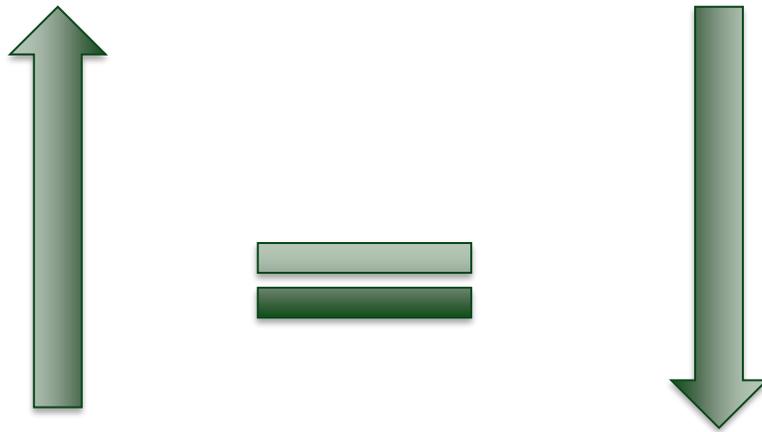
Absorption capabilities in the human intestinal cells

Vitamins release profile in a gastric simulation system



ABSORPTION STUDY WITH HUMAN INTESTINAL CELLS

Confirmed that the efficiency of B vitamin absorption is **concentration dependent**



Higher concentration
of B vitamins

Lower percentage of total
B vitamins absorbed

GASTRIC STIMULATION



TNO's patented in vitro gastrointestinal model TIM-1 offers rapid insight into the release, solubility, and availability for absorption of supplements within the gastrointestinal tract

IN-VIVO TESTING: TNO INTESTINAL MODEL

What is TIM-1 Testing?

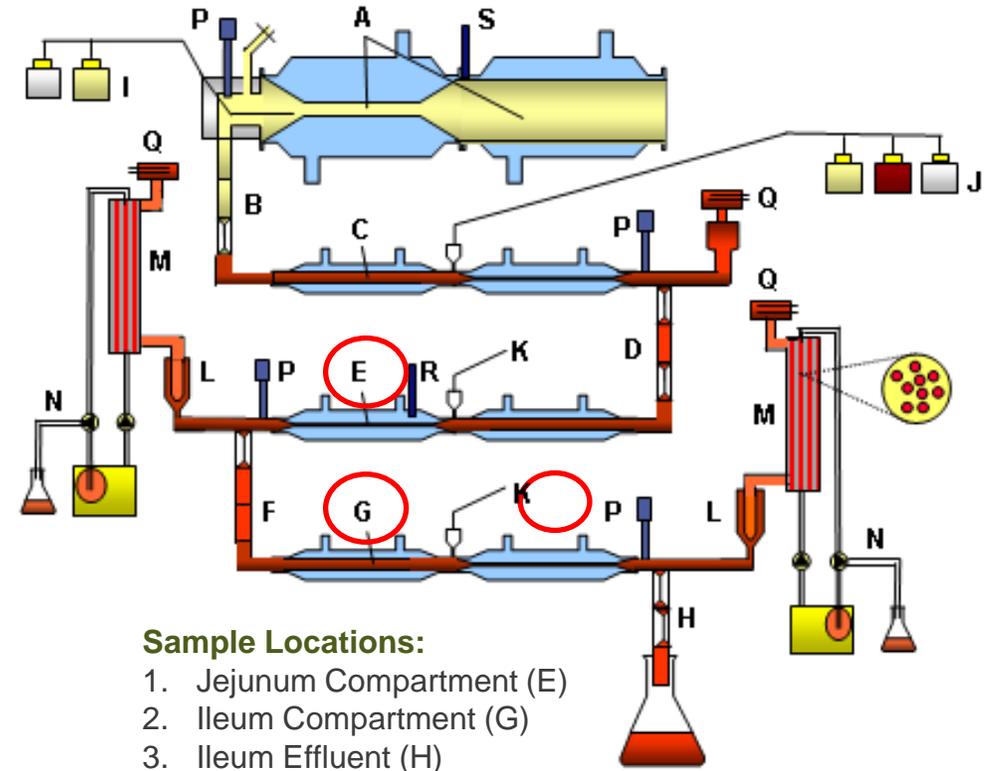
The TNO Gastro-Intestinal Model (TIM-1) is a validated system developed at TNO Nutrition and Food Research (Zeist, The Netherlands) that simulates the human GI tract through:

1. Sequential use of enzymes in physiological amounts
2. Appropriate pH throughout digestive tract
3. Peristalsis
4. Physiological transit times for each step of digestion

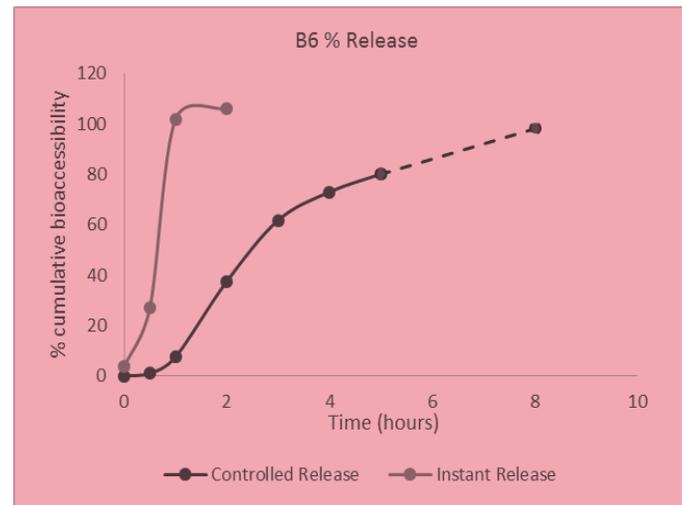
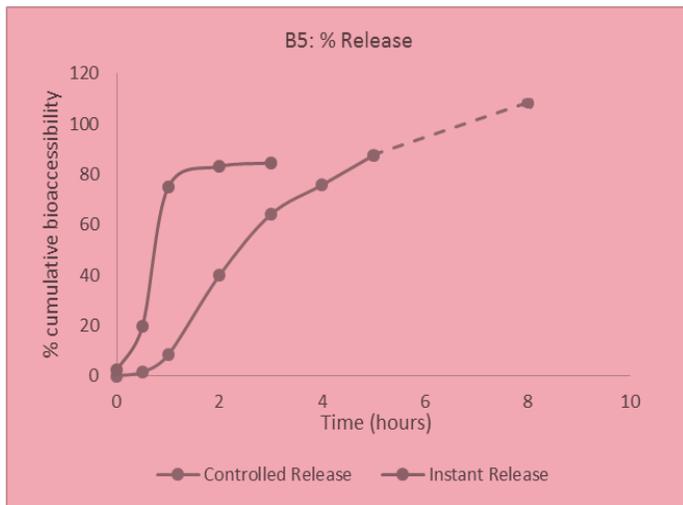
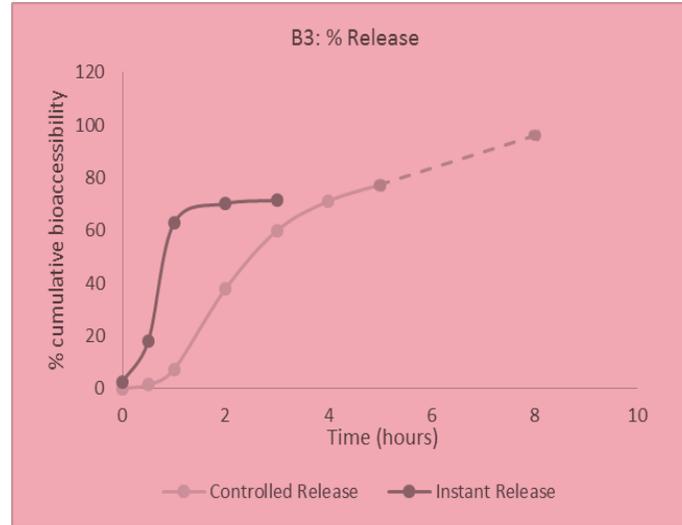
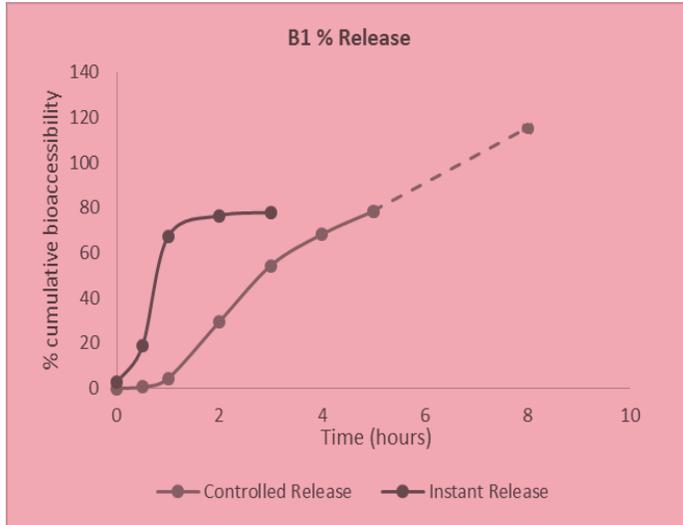
This technology has been approved by the US FDA as a Level 1 *in vivo/ in vitro* correlative model.

Testing the Vitamin B formulation through the TIM-1 provides an accurate measure of the release profile and intestinal concentrations of extended release B vitamins *in vivo*.

TNO Intestinal Model (TIM)
Schematic Diagram

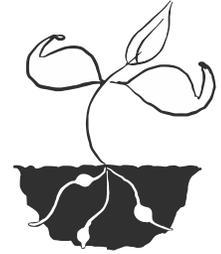
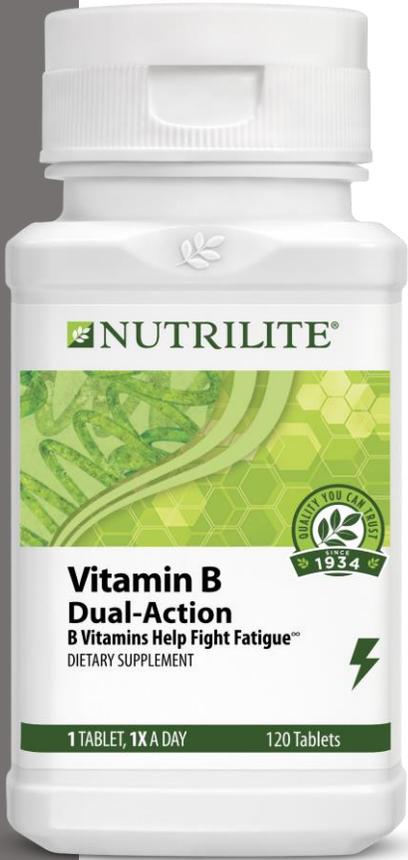


BEST OF SCIENCE : RESULTS SUMMARY

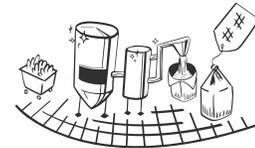
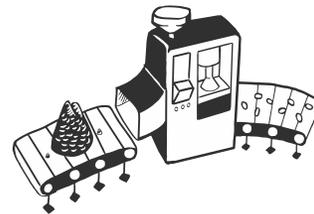


You can see that the instant release layer releases much quicker while the extended release layer releases slowly and completely over time

Sample of results from TIM -1



GO Behind THE Label

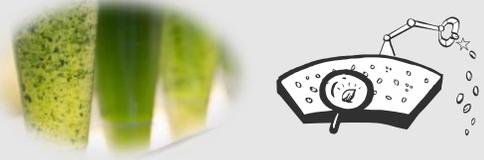


NUTRILITE TRACEABILITY WITH SPIRULINA

1. Choose the Botanical



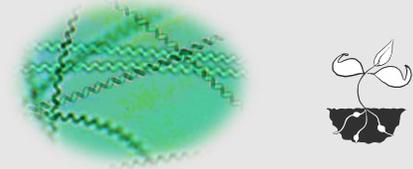
2. Seed Selection



3. Choosing The Farm



4. Growing



GO Behind THE Label

5. Harvesting



9. YOU



8. Packaging



7. Manufacturing



6. Extracting



NUTRILITE TRACEABILITY WITH SPIRULINA

1. Choose the Botanical

2. Seed Selection

3. Choosing The Farm

4. Growing

5. Harvesting

6. Extracting

7. Manufacturing

8. Packaging

9 Step Detailed Process

9. YOU



GO Behind THE Label



NUTRILITE VITAMIN B DUAL- ACTION



8 HOUR DUAL-ACTION

Instant & Extended Release
Gentle on the stomach

8 ESSENTIAL B VITAMINS



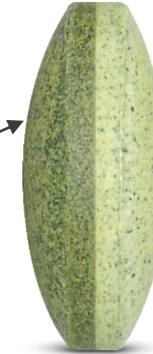
PACKED WITH NATURAL SPIRULINA

ONE PER DAY

- Convenient
- Easy to swallow
- Bi-layer design

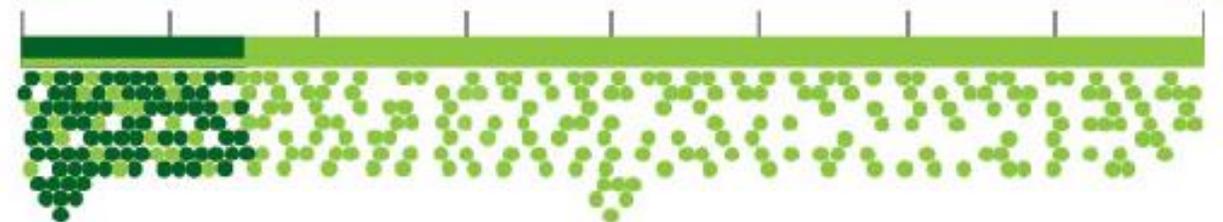
RELEASE TECHNOLOGIES

Instant Release



Extended Release

One dual-action, bi-layer tablet is packed with all eight essential B vitamins.



First, two B vitamins are released – quickly and completely.

The remaining six B vitamins are released over time - slowly and steadily - for eight hours.

Let's Recap



DAILY DOSE IN ONE TABLET

Nutritional Equivalents in Food

1. Provides 3.0 mg of B1 (thiamine) - more than found in **6** cups cooked peas



2. Provides 3.4 mg of B2 (riboflavin) - more than found in **7** cups plain yogurt



3. Provides 20 mg of B3 (niacin) - more than found in **5** oz* canned tuna



4. Provides 20 mg of B5 (pan acid) - more than found in **2** cups sunflower seed kernels



1 = 20 cups

*1 ounce = 28.35grams



DAILY DOSE ONE TABLET

Nutritional Equivalents in Food

5. Provides 4.0 mg of B6 (pyridoxine) - more than found in **3.5** cups canned chickpeas



6. Provides 125 mcg of B7 (biotin) - more than found in **12** egg



7. Provides 400 mcg of B9 (folate) - more than found in **1.5** cups cooked spinach



8. Provides 6.0 mcg of B12 (cobalamin) – more than found in **4** cups plain yogurt



1 = 9 cups + 12 

WHO CAN BENEFIT FROM THE B VITAMINS

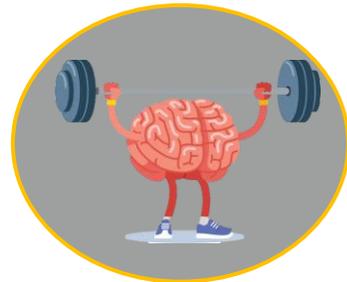
Energy Production



Healthy Skin, Nail & Hair



Red Blood Cell Production



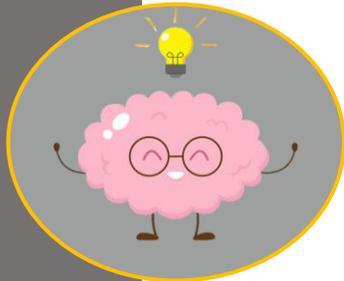
Healthy Mental Performance

Good Metabolism

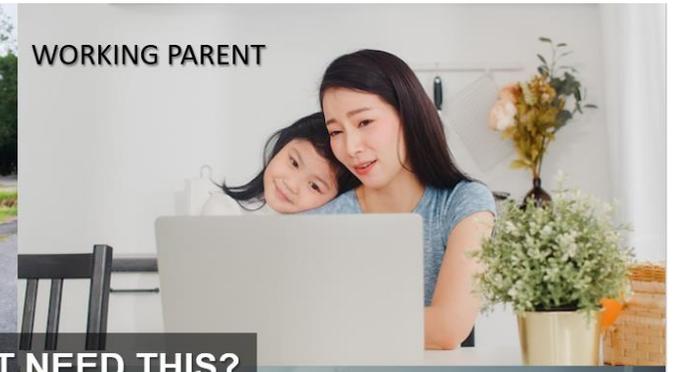


Healthy Immune System

Support Nervous System Function



FITNESS ENTHUSIASTS



WORKING PARENT

WHO MIGHT NEED THIS?



GOLDEN AGE – FOR VITALITY



YOUTHS – FOCUS



REVIVE. REVITALISE. RE-ENERGISE.



For internal training only