

# TASTY B POWDER

*Tasty B is an effervescent B-complex powder with anti-oxidants & trace elements.*

Tasty B contains high dose B-vitamins, vital for catalysing many biochemical reactions including the regulation of metabolism and conversion of foods to energy. Folic acid and vitamin B<sub>12</sub> help maintain normal haematopoiesis.

Tasty B contains minerals to regulate muscle response, nervous system transmission and strengthen connective tissue. Adequate calcium in our youth and throughout life is required to maximise bone mineralisation.

Tasty B has anti-oxidant activity. Oxidants can be generated by essentially normal metabolism, by smoking, alcohol intake and radiation. The herbs *Camelia sinensis* (green tea) and *Vitis vinifera* (grape seed) and *Ginkgo biloba* (gingko) enhance this activity and also protect the capillaries and may assist in maintaining peripheral circulation.

Tasty B aids in the maintenance or improvement of general wellbeing and for the prevention and treatment of vitamin and mineral deficiencies.

## Product Highlights

Tasty B Powder is based on our top selling Formula SF88 tablet. Each 4g dose is equivalent to the doses of ingredients in one Formula SF88 tablet. We have made some modifications to suit the powder formulation and added the anti-oxidant herbs, *Camelia sinensis* (green tea) *Vitis vinifera* (grape seed) and *Ginkgo biloba* (gingko.)

Tasty B makes a pleasant drink and is suitable for children, those convalescing and people who find it difficult to swallow a tablet.



**Nutrition Care Pharmaceuticals Pty. Ltd.**

## Possible Uses

The active ingredients in Tasty B Powder formulations, when professionally prescribed, may assist patients suffering from specific conditions. This statement does not imply or make a claim for a cure for disorders treated with Tasty B Powder and their use should be based on published and relevant scientific and clinical data.

## Dosage

Recommended Adult Dose: 1 level 5mL metric spoon (equivalent to about 4g powder) to be taken once daily with food, or as directed by a Health Care Professional. Mix with water or fruit juice, or sprinkle onto food.

## Active Ingredients

Each level 5mL metric spoonful (approximately 4g) of powder contains:

Vitamin A (as Palmitate)	750 IU
Nicotinic Acid	10 mg
Calcium Pantothenate	100 mg
Cyanocobalamin	100 mcg
Cholecalciferol	1 mg
Equiv. Vitamin D3	100 IU
Betacarotene	3 mg
Folic Acid	150 mcg
Manganese Sulphate Monohydrate	286 mcg
Equiv. Manganese	93 mcg
Zinc Gluconate	10 mg
Equiv. Zinc	1.3 mg
Zinc sulphate	21 mg
Equiv. Zinc	7.64 mg
Choline Bitartrate	50 mg
Thiamine Hydrochloride	50 mg
Riboflavine	27.4 mg
Nicotinamide	200 mg
Pyridoxine HCl	50 mg
Ascorbic Acid	50 mg
D Alpha Tocopheryl Acid Succinate	20.66 mg
Equiv. Natural Vitamin E	25 IU
Biotin	20 mcg
Calcium carbonate	330 mg
Equiv. Calcium	132 mg
Magnesium carbonate	30.64 mg
Equiv. Magnesium	7.6 mg
Potassium sulphate	34.76 mg
Equiv. Potassium	15.6 mg
Inositol	25 mg
Lysine HCl	10 mg
Glutamine	50 mg



<i>Panax ginseng</i> (Korean ginseng) root dry	100 mg
<i>Vitis vinifera</i> (grape) seed dry	600 mg
Equiv. Procyanidins	4.24 mg
<i>Camelia sinensis</i> (green tea) leaf dry	120 mg
Equiv. Catechins	6.7 mg
Equiv. Epigallocatechin 3-0-gallate	4.75 mg
<i>Ginkgo biloba</i> (gingko) leaf	500 mg
Equiv. Ginkgo flavonglycosides	2.67 mg
Equiv. ginkgolides and bilobalide	0.67 mg
Cupric Sulphate Pentahydrate	2 mg
Equiv. Copper	0.5 mg

## Literature Review

### Vitamin B1 (Thiamine)

Clinical deficiency of vitamin B<sub>1</sub> is known as Berri Berri, a nervous disorder that can lead to peripheral neuropathy. Deficiency states are possible in alcohol and drug use, inadequate diet, people over 55, pregnant and breast feeding women, problems with glucose metabolism, those under excessive stress, post-surgery, liver problems, and hyperthyroidism. Thiamine facilitates acetylcholine synthesis, neurotransmission, growth, appetite, digestion, energy production, pyruvate metabolism and many enzymatic activities. [1, 2, 4]

### Vitamin B2 (Riboflavin)

Deficiency can be found in vegetarians, those on oral contraceptive pill and for the reasons listed for B1 above. Riboflavin facilitates carbohydrate and amino acid metabolism and the synthesis of glycogen. It is important in the maintenance of mucosal, epithelial and eye tissues, growth and development. Riboflavin activates B6 and folate and extends the life of red blood cells. [1, 2, 4]

### Vitamin B3 (Nicotinamide, Nicotinic Acid, Niacin)

Clinical deficiency of niacin is called Pellagra that involves weakness, dermatitis, diarrhoea and dementia. Niacin is a component of a number of co-enzymes, two important ones being Nicotinamide Adenine Dinucleotide (NAD) and its phosphate (NADP). These are critical in cellular respiration and the release of energy from carbohydrates, fats and protein. Niacin

stimulates gastric secretion and bile secretion, hormone and lipid synthesis. Large doses have been used to treat high blood cholesterol. [1, 2, 4]

### Vitamin B5 (Calcium Pantothenate)

Vitamin B5 is essential for energy production, endurance and control of stress. It is involved in the synthesis of the neurotransmitter acetylcholine, cholesterol, cortisone and hormones. Deficiency can be caused for the same reasons as the other B vitamins. [1, 2, 4]

### Vitamin B6 (Pyridoxine)

B6 deficiency results in some of the symptoms of Pellagra since the conversion of tryptophan to niacin is B6 dependent.

B6 is one of the most complex vitamins as far as function is concerned, and is involved in at least 60 enzyme reactions. Important roles involve hormone and neurotransmitter synthesis and oxygenation of tissues.

B6 supplements are often helpful in relieving the symptoms of premenstrual tension. B6 is a natural diuretic and may improve fluid retention and oedema. B6 is commonly deficient and most people benefit from supplementation. [1, 2, 4]

### Vitamin B12 (Cyanocobalamin)

Bacteria can synthesise B12 in the healthy gut. A unique glycoprotein “intrinsic factor” must be present to facilitate absorption. Deficiency of either the vitamin or intrinsic factor is the common cause of megaloblastic (pernicious) anaemia. Other deficiency signs are related to the nervous system, with Alzheimer’s patients often being deficient. [1, 2, 4]

B12 with folic acid, B6 and SAME are largely responsible for regulating homocysteine levels thus preventing problems associated with hyperhomocysteinaemia.

B12 is essential in metabolism and formation of RNA and DNA. It maintains normal bone marrow and the production of red blood cells.



### **Folic Acid**

Folic Acid is a member of the vitamin B group. Folic acid is reduced in the body to tetrahydrofolate, which is a co-enzyme for various metabolic processes including the synthesis of the purines and pyrimidines of DNA. Folic acid is essential in tissues in which DNA synthesis and turnover is rapid, as in haematopoietic tissues, the mucosa of the gastrointestinal tract, and the developing embryo. Pregnancy & lactation are simply two of a list of conditions where folic acid supplementation is important.

### **Vitamin A (Retinyl Palmitate) & Betacarotene**

Vitamin A is a fat-soluble vitamin present in two forms in food. Retinol is found in fatty fish and some animal foods, such as dairy products. Carotene, a provitamin A found in fruit and vegetables is converted to vitamin A. [6] Vitamin A is required in vision where retinol binds with various proteins to form photoreceptors in the cone and rod of the eye. Vitamin A is also important for cell differentiation, growth and reproduction. [7]

Vitamin A deficiency is associated with increased susceptibility to infection. [8] Supplementation enhances lymphocytic response to antigens and antibody response and may diminish susceptibility of infection. [9] Vitamin A status at the time of measles infection is critical to the clinical outcome. The WHO and UNICEF recommend in countries where the fatality rate is greater than 1% that vitamin A be supplemented to all infected children. [10] These infections frequently lead to increased excretion of vitamin A and the subsequent development of vitamin A deficiency. [11]

### **Vitamin C (Ascorbic Acid)**

Vitamin C has many roles in human metabolism including strengthening connective tissue, stimulating immune function, co-factoring for various enzymes, metabolism of other nutrients and as a powerful anti-oxidant.

Vitamin C enhances iron absorption by keeping iron in the reduced (ferrous) state to prevent or delay the formation of insoluble or undissociated ferric compounds, thus keeping it soluble and available for absorption at the alkaline pH of the duodenum, [15] and therefore useful in iron-deficiency anaemia. Vitamin C improves work capacity and fatigue symptoms. [16] Because vitamin C protects connective tissue like cartilage, it has been shown to reduce the progression of osteoarthritis. [17]

Vitamin C has been shown to enhance immunity. [18] In a study of healthy students receiving 1 gm vitamin C daily, immunoglobulin levels showed a significant increase compared to controls. [19] Supplementation may also stimulate neutrophil motility and enhance phagocyte antimicrobial activity. [18] Although vitamin C has not been shown to prevent colds at the 1 gram per day level, it can decrease symptoms and some individuals achieve dramatic results. [20]

### **Vitamin D3 (Cholecalciferol)**

Vitamin D3 is a prohormone that is metabolised to 1, 25 dihydroxyvitamin D3 in the kidney. This active form of vitamin D brings about normal mineralisation of bone and endochondral calcification, preventing rickets in the young and osteomalacia in the adult. The vitamin controls and maintains optimum levels of calcium and phosphate in blood plasma. Because the vitamin is essential for calcium absorption, it may also function in the prevention of osteoporosis by ensuring adequate calcium uptake, thus preventing reliance of skeletal calcium. [1] Australia has no RDI for D3 but the American RDI is 200 IU for adults and 400 IU for infants. The body is capable of synthesising its own vitamin D from a cholesterol derivative in the skin in the presence of ultra-violet light by a process called photobiogenesis. This process results in the formation of vitamin D3. Anybody housebound is at risk of D3 deficiency as window glass absorbs most UV light.



### **Vitamin E**

Vitamin E is a fat-soluble vitamin. Its main functions are as an anti-oxidant and anti-coagulant. It is involved in stabilising membranes and playing a role in cell respiration. There is evidence that vitamin E is important for immune function, although exactly how is not clear. It works synergistically with other anti-oxidants in this respect, particularly selenium.

Vitamin E supplementation improved red blood cell survival times in deficient patients from an average 19.2 days to 24.9 days. [22]

A number of trials have shown supplementation to improve cystic breast disease and improve the ratio of progesterone to estradiol, while elevated LH and FSH levels were decreased to normal levels. [21]

Supplementation of vitamin E 50 mg, three times a day has also been shown to improve spasmodic dysmenorrhoea in 68% of the experimental group compared to 18% of controls. [23]

Vitamin E as stated plays a role in stabilising membranes; this controls capillary leakage, and reduces oedema.

### **Biotin**

Biotin is a water soluble dicyclic monocarboxylic acid considered to be part of the vitamin B complex. It plays an important role in the metabolism of fatty acids and amino acids. In response to biotin supplementation there was an increase in lymphocyte carboxylase activity in 22 malnourished children. [24] Biotin is especially useful in candida and candidiasis (thrush) treatments.

### **Inositol**

Inositol is a 6 carbon compound found in nearly all animal and plant cells. It is found in high levels in male reproductive organs, semen and heart and skeletal muscle. Inositol mediates cell response to stimuli. Choline and the vitamin B complex aid in the absorption of inositol.

### **Choline**

Choline is a key part of the phospholipid lecithin and is a precursor of acetylcholine. Choline can also be synthesised in the body, requiring B12 and folic acid. Choline is found in the structure of fat and nerves of our body and used in the synthesis of RNA and DNA.

### **Lysine**

Lysine is an essential amino acid and as such is a building block of proteins. It promotes tissue repair and growth and the production of a number of antibodies, enzymes and hormones.

### **Glutamine**

Glutamine is thought of as a nonessential amino acid, but it may be essential during certain inflammatory conditions such as infection or injury. Glutamine is a necessary nutrient for cell proliferation and serves as a specific fuel for inflammatory cells. Glutamine has been shown to improve nitrogen balance, decrease infection rate and reduce hospitalisation. [25]

### **Calcium**

The average adult body contains 1 kg of calcium, 99% of which is found in bones and teeth. The 1% in solution plays a vital role in directing cell functions and nerve impulses. The concentration of calcium in serum must be kept within narrow limits (90-100 mg/L). [1] If calcium intake is inadequate it is borrowed from the bones. If bone depletion continues osteoporosis will result.

Post-menopausal women have a daily calcium requirement of 1.5 gms while premenopausal women over 35 require 1.0 gm daily. Ingest less than the above amounts and the individual is in negative calcium balance. [3]

### **Magnesium**

Magnesium is a common cation in the body and is involved in many essential enzymatic reactions. Magnesium is involved in reactions involving ATP and energy metabolism. Magnesium plays an important role in neuromuscular transmission and activity. It acts



at some points synergistically with calcium, while at others it is antagonistic. [4]

Magnesium promotes and regulates parathormone (PTH), which in turn stimulates the osteoclasts to reabsorb calcified bone. [26] Magnesium intake is positively correlated with bone mineral density.

Low serum magnesium levels are often associated with muscle cramps. The favourable effect of magnesium on nocturnal leg cramp during pregnancy is due to the compensation of a combined magnesium and calcium deficiency and induced membrane stabilization. [27]

### **Manganese**

Manganese is necessary for bone mineralisation and deficiency may be associated with decreased bone density and increased prevalence of fractures. In an observation study blood manganese levels in osteoporotic women were found to be only 25% that of controls. [28]

### **Zinc**

Zinc is one of the most important of all the trace elements. Well over 200 enzyme systems require zinc for structural integrity or catalysis, including many involved in the synthesis of DNA and RNA. It was shown in 1993 that a transcription factor, the assembly of proteins that attaches itself to a gene to activate it, engages the gene with zinc “fingers”, which are projections of groups of amino acids bound to zinc. This explains why zinc is so important to growth and to wound healing, because DNA is needed to direct the synthesis of protein tissue. [1]

Zinc plays a role in such conditions as acne, BPH, appropriate cell division & repair, glucose regulation, GIT disturbances, infection, fertility, osteoporosis, ulcers and blood pressure.

Copper is a versatile mineral found in many tissues of the body. However over 90% is found bound to a blood protein ceruloplasmin. Copper facilitates oxygen transport, melanin and myelin synthesis, maintenance of skin, bone and nerve function, clotting (factor 5), regulates iron metabolism and has many more functions

including the resolution of the inflammatory process. [1, 2, 4]

### ***Panax ginseng* (Korean ginseng)**

Ginseng is, without question, the most famous medicinal plant of China where it is used for its revitalising properties, especially after long illness.

Ginseng’s main active constituents are ginsenosides. Other constituents are glycosides, beta-sitosterol, vitamins and minerals.

Ginseng is an adaptogen and has applications in anxiety, fatigue and immune function.

In a study of nurses, those taking ginseng demonstrated higher scores of competence, mood parameters and objective psychophysical performance compared to those receiving placebo. [29] Ginseng is considered to have ergogenic effects used to enhance exercise performance. Ginseng spares glycogen utilisation in exercising muscle by enhancing the utilisation of oxygen in fatty acid oxidation. Fatigue is closely related to depression of glycogen stores and build-up of lactic acid. By conserving body carbohydrates, time to exhaustion is extended. [30]

In an experimental double blind study groups receiving 100 mg *Panax ginseng* resulted in significantly enhanced phagocytosis index and fraction, lymphocytes (T3), T4 subset and T4/T8 ratio. [32]

### ***Camellia sinensis* (green tea)**

The major active substance in green tea is a group of polyphenols referred to as catechins. This is a general denomination for any compound, which holds a structure of 3-hydroxy-flavan. Catechins include Epicatechin (EC), Epigallocatechin (EG), Epicatechin-gallate (ECG) and Epigallocatechin gallate (EGCG). EGCG is found in green tea only.

Green tea also contains the methylxanthines caffeine and theobromine, minerals, gamma amino butyric acid (GABA), polysaccharides and an amino acid theanine, which gives green tea its taste.





Both green tea and black tea are derived from the same plant (*Camellia sinensis*). Green tea is produced by slightly steaming the fresh cut leaf, while to produce black tea the leaves are allowed to ferment. This fermentation converts many of the polyphenols that possess outstanding therapeutic action to compounds with much less activity.

The steaming of green tea inactivates the enzyme responsible for this and green tea is therefore very high in polyphenols with potent anti-oxidant [33]

### ***Ginkgo biloba* (ginkgo)**

This standardised extract has been shown to increase cutaneous capillary blood flow and decrease erythrocyte aggregation. The ginkgolides have platelet activating factor (PAF) antagonist properties. Ginkgo flavones are superoxide scavengers and increase the half life of endothelium derived relaxing factor (EDRF). These properties reduce vascular spasm. The anti-oxidant properties are also useful in primary prevention and treatment of many long term diseases.

### ***Vitis vinifera* (grape seed)**

Grape seed extract is standardised to procyanidins, a compound with anti-oxidant properties. These compounds are closely related to the catechins of green tea and the flavonoids of ginkgo.

### **Summary**

Tasty B is a high potency B-Complex in ratios best utilised by the human cell. It contains trace elements, minerals and herbal anti-oxidants.

It is useful for improving general health, preventing complications from illness and slowing the progression of some degenerative diseases. It is particularly suitable for children and the aged who find large tablets difficult to swallow.

### **References**

1. Florence T.M. and Setright R.T. 1994. *The Handbook of Preventative Medicine* Kingsclear Books, Sydney.
2. Anon. 1993. Australasian College of Nutrition and Environmental Medicine (ACNEM) *Course notes*, Beaumaris VIC.
3. Heaney RP et al. 1978. Menopausal changes in calcium balance performance *J Lab Clin Med* 92(6):953-63.
4. Goodhart R. S. and Shils M. E. 1980. *Modern Nutrition in Health and Disease*, 6<sup>th</sup> Ed., Lea & Febiger, Philadelphia.
5. Thorn G.W. et al 1977. *Harrisons Principles of Internal Medicine*, e.d. 8, New York, McGraw-Hill Book Co.
6. Helman A.D. 1991. *Vitamins, Minerals and other nutrients in Clinical Practice*. Arbor Publications. Aust.
7. Goodhart R.S. et. al. 1980. *Modern Nutrition in Health and Disease*. 6<sup>th</sup> Edition. \_ Lea & Febiger Philadelphia.
8. Sommer A. et al. 1984. Increased risk of respiratory disease and diarrhoea in children with pre-existing mild vitamin A deficiency. *Am. J. Clin. Nutr.* 40:1090-95,
9. Beisel W. R. 1982. Single nutrients and immunity. *Am J. Clin. Nutr.* 35:417-68.
10. Editorial. 1987. Vitamin A for measles. *Lancet* 1:1067-68.
11. Stephensen C. B. et. al. 1994. Vitamin A is excreted in the urine during Acute Infection. *Am. J. Clin. Nutr.*; 60 : 388-92.
12. Underwood, B. A. 1994. *The Retinoids, Biology, Chemistry and Medicine*, 2<sup>nd</sup> Edition. Raven Press, New York.
13. Tiez N. (Ed). 1990. *Clinical guide to laboratory tests* W.B. Saunders, Philadelphia.
14. Rutishauser I. 1986. Vitamin A *J Food Nutr.* 42(2):48-59.
15. Monsen E. R. 1982. Ascorbic Acid: An enhancing factor in iron absorption. Nutritional Bioavailability of Iron. *American Chemical Society*, 85-95.
16. Gerster E. et. al. 1989. Daily vitamin C in athletic performance. *J Am Coll Nutr* 8(6):636-43.
17. McAlindon T. E. et al. April 1996. "Do Anti-oxidant Micronutrients Protect against the Development and Progression of Knee Osteoarthritis: *Arthritis & Rheumatism*, 39(4):648-656.
18. Anderson R. 1984. The immunostimulatory, anti-inflammatory and anti-allergic properties of ascorbate, *Adv Nutr Res* 6:19-45.
19. Prinz W. et. al. 1977. The effect of ascorbic acid supplementation on some parameters of the human immunological defence system. *Int J Vitam Nutr Res* 47(3):248-57.
20. Lewin S, 1976. *Vitamin C: Its Molecular Biology and Medical Potential*, Academic Press, London.



21. Werbach M.R. 1993. *Nutritional Influences on Illness: A sourcebook of clinical research.* Third Line Press, Tarzana, California.
22. Leonard P.J. et. al. 1971. Effect of alpha-tocopherol administration on red cell survival in Vitamin E deficient human subjects. *Am J Clin Nutr* 24:388-93.
23. Butler E.B., McKnight E. 1955. Vitamin E in the treatment of primary dysmenorrhoea. *Lancet* 1:184-7.
24. Velazquez A. et al. 1995. Biotin supplementation affects lymphocyte carboxylases and plasma biotin in severe Protein-Energy malnutrition *American Journal of Clinical Nutrition* 61:385-391.
25. Wilmore DW & Shabert J.K. 1998. Role of Glutamine in Immunological Responses. *Nutrition* 1 (7/8):618-626.
26. Anast C. S. et al. 1976. Impaired release of parathyroid hormone in magnesium deficiency. *J. Clin Endocrinol Metab* 42:707.
27. Classen H.G., Helbig J. 1984. Magnesium therapy in pregnancy: Pharmacologic and toxicological aspects of magnesium supplementation and use in pre-eclampsia and threatened premature labour. *Fortschr Med* 102(34):841-4.
28. Raloff J. 1986. Reasons for boning up on manganese. *Sci News*. Sept 27:199.
29. Hallstrom C. et. al. 1982. Effect of ginseng on the performance of nurses on night duty. *Comp Med East West*. 6:277-82.
30. Avakia E. V., Evonuk E. 1979. Effects of Panax ginseng extract on tissue glycogen and adrenal cholesterol depletion during prolonged exercise. *Planta Med* 36:43-8.
31. Yun T. K. et al. 1990. A case – control study of ginseng intake and cancer. *Int J Epidemiol* 19(4):871-6.
32. Scaglione F. et al. 1990. Immunomodulatory effects of two extracts of Panax ginseng. *Drugs Exp Clin Res* 16(10):537-42.
33. Werbach M.R. and Murray M.T. 1994. *Botanical Influences on Illness.* Third Line Press. Tarzana USA.
34. Oguni. I. 1989. *Japanese J of Nutrition* 47, 31.