



# CYTOPLAN

NATURE MEETS SCIENCE



# Food State™ & Wholefood



Science Based Supplements for Health Professionals



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Cytoplan celebrates 28 years in the field of food-based supplementation and from the moment of conception to the present day we have promoted the philosophy that nutrients are best delivered to the body "in the same form as food".

The philosophy and message of Cytoplan was founded on the simple logic that our bodies are designed to eat food and utilise its components for the maintenance of life. The ultimate goal of Cytoplan is to 'improve the health of the nation' by supplying supplements in a bio-effective form for optimal absorption and utilisation.

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# Food State™ and Wholefoods

We were not designed to swallow vitamin pills; we were designed to eat food. However, activity levels continue to fall and dietary intakes decline (caloric intake is down 30% in the last 50 years alone), the way our food is grown and processed has changed beyond recognition and our basic diet, no matter how well we eat, no longer always provides us with the amount of nutrients we require for optimum health. Conversely, our demanding modern lifestyle has increased the demand for nutrients and created imbalances. As a consequence the need for additional micronutrients is probably greater now than at any time in the last century and multiple micronutrient depletion continues to increase.



# Food State™ Nutrients

Food State™ nutrients are combined in a variety of appropriate food bases which would naturally carry significant levels of the nutrient. This ensures they come complete with the phytonutrients and associated food factors that are necessary for optimal absorption, use and retention in the body. Food State™ vitamin C, for example, is presented in a citrus pulp that also contains the flavonoids naturally present in citrus fruit. Food State™ vitamin E comes complete with all the four tocopherols and tocotrienols that make it a natural food complex. Beta carotene is complexed with carrot concentrate. B vitamins are provided in a base of inactive *Lactobacillus bulgaricus* or alfalfa.

Inactive *Lactobacillus bulgaricus* is an appropriate non allergenic carrier base for most nutrients as it is a native inhabitant of the human gastrointestinal tract.

Food State™ nutrients are gentle yet effective as the examples below – Vitamin C and Selenium – demonstrate.

## Food State™ Vitamin C

In comparative animal<sup>(1)</sup> and human trials<sup>(2)</sup>, Food State™ vitamin C was better absorbed than USP C (ie isolated vitamin C) and provided nearly double the plasma protection. This enhancement is probably due to the improved stability of Food State™ vitamin C in the small bowel<sup>(3)</sup>. Because of its improved uptake and storage characteristics, Food State™ vitamin C enters the bloodstream slightly later than USP vitamin C but reaches higher levels and stays there longer<sup>(1,2)</sup>. Compared to USP C, Food State™ vitamin C produced a 54.5% greater change in plasma ascorbate and a 74.4% greater change in red blood cell ascorbate<sup>(4)</sup>.

When citrus extract is combined with vitamin C, the naturally occurring flavonoids in citrus extract confer synergistic antioxidant activity, giving the combination of an antioxidant capacity up to an order of magnitude greater than the equivalent amount of USP vitamin C<sup>(5)</sup>.

Compared to USP vitamin C, Food State™ vitamin C was almost twice as effective at lowering erythrocyte sorbitol levels in human subjects<sup>(6)</sup>. The glucose metabolite sorbitol accumulates in tissues as glucose plasma levels increase (ie in diabetes) and is implicated in causing the long-term complications of diabetes such as retinopathy, cataracts, renal damage and atherosclerosis.

In related animal studies Food State™ vitamin C was more effective than USP C at protecting rats from sugar-induced cataracts<sup>(5)</sup>, reducing both their numbers and severity. In hypercholesterolaemic hamsters, Food State™ vitamin C was more effective than either USP C or flavonoids on their own at lowering LDL cholesterol levels and inhibiting cholesterol oxidation as a result strongly inhibiting atherosclerosis<sup>(7)</sup>.

Finally, Food State™ vitamin C was found to be highly effective at preventing AGE formation in human subjects, cutting it by 46.8%<sup>(8)</sup>. AGEs or Advanced Glycation End-Products are formed when high levels of glucose react with proteins, denaturing them and leading to loss of protein functions. AGE formation is increased in diabetes, and, as with increased sorbitol levels, is another important cause of diabetic complications.

# Food State™ Selenium

Food State™ is equally suited to the enhanced delivery of trace metals. Food State™ selenium has better bio-availability than either selenite or selenate<sup>(9)</sup>. At the same time it is considerably less toxic. Its LD50 in rats is 3 to 5x higher than inorganic selenium<sup>(10)</sup>.

In animal models, Food State™ selenium is more effective at inhibiting LDL cholesterol oxidation than both inorganic selenite and selenomethionine<sup>(11)</sup>. This suggests the Food State™ selenium has been effectively incorporated into glutathione peroxidase, an important antioxidant enzyme which protects the body against cholesterol oxidation.

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## Cytoplan Wholefood Nutrients

Cytoplan Wholefood Nutrients are derived from a number of natural plant sources including vitamin D3 from lichen, vitamin C from acerola cherry and minerals from *Brassica juncea*, a member of the broccoli family of vegetables. This *Brassica* plant is an edible species which has a great capacity to bio-accumulate high levels of minerals to enable good levels to be achieved in small doses of supplementation. These nutrients are thus in the same form as in conventional foods; just in much higher levels. The other great advantage of natural plant minerals is that they contain thousands of phytonutrients which have complementary and beneficial action in the human body. They contain all the bioactives that our bodies expect to obtain from fresh vegetables including indole-3-carbinol, sulphoraphane and glucosinates.

Minerals are taken up from the hydroponic growth solution into the root systems of the plants. They are transported into the leaf and become tissue metabolised into the plant leaf tissue. This is the natural process that also occurs during normal plant growth from soil. The advantage of using a hydroponic growth medium is that the mineral levels can be controlled, the growing environment can be kept consistent and the nutrition, temperature and light can be kept at optimum for growth, allowing a consistent and mineral rich product to be produced all year round. Once the plants are ready to be harvested "Phytoscan" technology (spectroscopy) is used to assure potency of the product. It shows the location of each mineral to confirm biotransformation.

Summary of benefits:

- Precision engineered delivery system
- Fully controlled environment from seed to finished material
- Pesticide, contaminants and heavy metal FREE
- Optimised amounts and ratios of minerals

The superior performance of Wholefood minerals has been established in published scientific studies<sup>(12-15)</sup>. For example, in a double blind controlled study of 40 patients with mild anaemia the subjects were given either 65 mg Feosol or 18 mg wholefood iron for 60 days. Blood samples were taken at outset and on completion. Wholefood iron provided performance equivalent to 4x higher dosage of Feosol and was much better tolerated<sup>(16)</sup>.

## NEW Soil Association Certified Organic Food Range – now available

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Our new range includes organic Ashwagandha, Bacopa Monnieri, Spirulina, Garlic and Kelp; a multi formulation for women, B complex and vitamin C. The vitamin formulations use organic fruits, vegetables and botanicals that have naturally high levels of certain nutrients. They come complete with their co-factors and co-nutrients to support their stability and activity. For example organic guava and Holy basil provide B vitamins. Amla fruit provides vitamin C along with polyphenols. The nutrients are extracted with water and no synthetics or additives are used.

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All our gentle and effective products are free from pesticides/herbicides and genetically modified organisms. Most are suitable for vegans, including our Vitamin D3, and within our essential fatty acids range we have an algal Omega-3 (DHA/EPA) and Organic Flaxseed Oil.



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**WHOLEFOOD**

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## Use of methylated and reduced forms, where appropriate and augmentation of levels

It is recognised that methylated forms of certain nutrients are more bio-effective, for example, methylfolate has greater activity in the body than folic acid; however, this and other methylated and reduced forms of nutrients do not naturally occur in plant material. Therefore, in order to produce the most bio-effective products we use these nutrients in our formulations. Equally important, is optimising the levels of all nutrients to meet needs and in order to achieve this, certain nutrients may be augmented above that which can be achieved from food. We always use nutrients that are as close as possible to those in food for this purpose.

### Folic acid/Folate/L-methylfolate

Folic acid is the name most people know who are looking for this nutrient. However recent research has identified that folic acid in its isolated form is not necessarily beneficial in all people. When this research emerged a few years ago we immediately changed the folic acid component in our products to L-methylfolate which is now thought to be the most bio-effective form of this nutrient. This is with the exception of some of our Food State™ range. We have hence labelled these products as containing folic acid. This is not isolated folic acid (a monoglutamate). It is a safe food form of the vitamin (i.e. a polyglutamate).

You might see the wording 'folic acid' on some products as many members of the public still look for this, so until there is a greater awareness of the differences we will continue to list the active form but have available the generic descriptor somewhere on the product.

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