



Your Monthly Update

Dear Colleague

Welcome to the February newsletter from Pure Bio Ltd.

We have responded to a direct request with our featured topic this month and are covering the subject of *Cardiovascular Dysfunction*; this month covering Homocysteine and Triglycerides and next month we will cover Cholesterol. Please continue to submit requests for your chosen topics.

Our new catalogue will be launched to coincide with the Trade Show – if you are registered with us, you will automatically be sent a new catalogue as soon as they are available. We have a number of new items listed in the catalogue, so do take the time to look through when it arrives.

We always welcome feedback and suggestions.

Cardiovascular Disease

Overview

Preliminary evidence has linked high salt consumption with increased cardiovascular disease incidence and death among overweight, but not normal weight, people. Among overweight people, an increase in salt consumption of 2.3 grams per day was associated with a 32% increase in stroke incidence, an 89% increase in stroke mortality, a 44% increase in cardiovascular disease mortality, a 61% increase in cardiovascular disease mortality, and a 39% increase in death from all causes. Intervention trials are required to confirm these preliminary observations.

Moderate alcohol consumption appears protective against cardiovascular disease. However, regular, light alcohol consumption in men with established coronary heart disease is not associated with either benefit or deleterious effect.

A high intake of carotenoids from dietary sources has been shown to be protective against cardiovascular disease in several population-based studies. A diet high in fruits and vegetables, fiber, and possibly fish appears protective against cardiovascular disease, while a high intake of saturated fat (found in meat and dairy fat) and trans fatty acids (in margarine and processed foods containing hydrogenated vegetable oils) may contribute to cardiovascular disease. In a preliminary study, the total number of deaths from cardiovascular disease was significantly lower among men with high fruit consumption than among those with low fruit consumption. A large study of male healthcare professionals found that those men eating mostly a “prudent” diet (high in fruits, vegetables, legumes, whole grains, fish, and poultry) had a 30% lower risk of myocardial infarctions compared with men who ate the fewest foods in the “prudent” category. By contrast, men who ate the highest percentage of their foods from the “typical American diet” category (high in red meat, processed meat, refined

grains, sweets, and desserts) had a 64% *increased* risk of myocardial infarction, compared with men who ate the fewest foods in that category. The various risks in this study were derived after controlling for all other beneficial or harmful influencing factors.

A parallel study of female healthcare professionals showed a 15% reduction in cardiovascular risk for those women eating a diet high in fruits and vegetables—compared with those eating a diet low in fruits and vegetables.

Lifestyle Modification

Both smoking and exposure to second-hand smoke increase cardiovascular disease risk.

Moderate exercise protects both lean and obese individuals from cardiovascular disease.

1) Raised Homocysteine

Protocol Summary

Ranking	Nutritional Supplements	Botanical Medicine
Primary	Folic acid, vitamin B6, and vitamin B12 (in combination)	
Secondary	Betaine (trimethylglycine) Choline	

Primary – Reliable and relatively consistent scientific data showing a substantial health benefit.

Secondary – Contradictory, insufficient, or preliminary studies suggesting a health benefit or minimal health benefit.

Other – An herb is primarily supported by traditional use, or the herb or supplement has little scientific support and/or minimal health benefit.

Dietary Modification

Since homocysteine is produced from methionine, intake of large amounts of methionine would presumably increase homocysteine levels. Indeed, ingestion of supplemental methionine is used experimentally as a way to increase homocysteine levels. Foods high in methionine that have also been linked with an increased risk of cardiovascular disease include meat and eggs. The extent to which consumption of these foods affects the risk of cardiovascular disease as a result of their methionine content remains unknown.

A controlled trial showed that eating a diet high in fruits and vegetables containing folic acid, beta-carotene and vitamin C effectively lowered homocysteine levels. Healthy people were assigned to either a diet containing a pound of fruits and vegetables per day, or to a diet containing three and a half ounces of fruits and vegetables per day. After four weeks, those eating the higher amount of fruits and vegetables had an 11% lower homocysteine level compared with those eating the lower amount of fruits and vegetables.

Another study of men with cardiovascular disease demonstrated that consumption of whole-grain and legume powder at breakfast, instead of their usual breakfast of refined rice, resulted in a significant reduction in homocysteine levels.

Vegetables that are High in methionine/ per 100 gm (more than 25mg - 50mg of methionine/ 100 gm of the product)	Broccoli, Mushroom, Cauliflower, Avocado, Bean sprouts, potatoes,
Vegetables that are High in methionine/ per 100 gm (more than 50mg of methionine/ 100 gm of the product)	Spinach, Green Peas, corn (boiled),
Vegetables that are low in methionine / per 100 gm (less than 25 mg / 100 gm of the product)	Carrot ,Beetroot (boiled)., Swiss Chard, Tomatoes, Italian Squash, Yellow Squash, Green Pepper, Red Pepper, Yellow Pepper, Eggplant, Green Cabbage & Red Cabbage, Kale (boiled), lettuce, cucumber, Green Beans (boiled), Red& Brown Onions, Celery, okra
Fruits that are medium high in methionine 25-50 mg of methionine/ 100 gm of the product)	Navel orange, Mandarin Oranges,
Fruits that are Low in methionine (less than 25mg of methionine/ 100 gm of the product)	Watermelon, cantaloupe, Honeydew melon, apples, pears, Cranberries, Raspberries, Blueberries, Strawberries, mango, plums, Dates (dried), peaches, nectarines, Banana, pineapple, apricots
Snacks that are moderate in methionine (25- 50mg of methionine/ 28 gm of the product)	Potato chips(28 gm), French Fries(10 pieces), Hash browns, pretzels
Snacks that are high in methionine (more than 50mg of methionine/ 28 gm of the product)	All nuts, like peanuts, pistachio, Macadamia Nuts Popcorn
Deserts that are low in methionine (less than 25mg of methionine/ 100 gm of the product)	Mocha mix Ice cream, plain fruit sorbet(with no added egg white
Other foods that are High in methionine (more than 100mg of methionine/ 100 gm of the product)	Tofu, dried beans like kidney beans, black beans, Tempeh

Lifestyle Modification

According to a recent study, both cigarette smoking and coffee consumption were associated with increased homocysteine levels. These findings are consistent with studies that have found both smoking and caffeine consumption to be associated with an increased risk of both cardiovascular disease and osteoporosis.

In one study, a diverse group of people participated in a week-long program that included a strict vegan diet, stress management and spirituality enhancement sessions, group support, and exclusion of tobacco, alcohol, and caffeine. B vitamin supplements known to reduce blood homocysteine levels were not provided. After only one week in the program, the average homocysteine level fell 13%.

Nutritional Supplement Treatment Options

Vitamin B6, folic acid, and vitamin B12 all play a role in converting homocysteine to other substances within the body. By so doing, they consistently lower homocysteine levels in research trials, a finding that is now well accepted. Several studies have used (and some doctors recommend) 400–1,000 mcg of folic acid per day, 10–50 mg of vitamin B6 per day, and 50–300 mcg of vitamin B12 per day.

Of these three vitamins, folic acid supplementation lowers homocysteine levels the most for the average person.

Betaine (trimethylglycine) (6 grams per day) and **choline** (2 grams per day) have each been shown to lower homocysteine levels. More recently, 1.5 grams of betaine per day, an amount similar to that in a typical diet, also has been found to lower homocysteine levels. Doctors usually consider supplementation with these nutrients only when supplementation with folic acid, vitamin B6, and vitamin B12 do not reduce homocysteine levels sufficiently. The results of this study, however, point to the potential benefit of increasing one’s intake of foods rich in betaine (such as whole wheat, spinach, beets, and other plant foods).

Niacin is sometimes given in large amounts to people with elevated cholesterol levels. A controlled study found that 1,000 mg or more per day of niacin raised homocysteine levels. Since other actions of niacin lower cardiovascular disease risk, there is obviously a need for careful balance and intake only under the guidance of a qualified practitioner.

2) Triglycerides

Protocol Summary

Ranking	Nutritional Supplements	Botanical Medicine
Primary	Fish oil (EPA/DHA) Niacin (vitamin B3) Pantethine	Guggul Oats
Secondary	Calcium Chromium Fructo-oligosaccharides (FOS) Inositol hexaniacinate (vitamin B3) L-carnitine Policosanol	Fenugreek Garlic Psyllium Red yeast rice
Other	Fibre	Green tea Maitake

Dietary Modification

While consuming moderate amounts of alcohol does not appear to affect TG levels, heavy drinking is believed to be an important cause of hypertriglyceridemia.

Ingesting refined sugar increases TG levels, as well. People with elevated TGs should therefore reduce their intake of sugar, sweets, and other sugar-containing foods. There is also evidence that ingesting fructose in amounts that are found in a typical Western diet can raise TG levels, although not all studies agree on that point. It should be noted that most studies of fructose investigated the refined form, not the fructose that occurs naturally in some fruits.

In a study of heavy caffeine users (individuals who were consuming an average of 560 mg of caffeine per day from coffee and tea), changing to decaffeinated coffee and eliminating all other caffeinated products for two weeks resulted in a statistically significant 25% reduction in TG levels.

Water-soluble fibres, such as pectin found in fruit, guar gum and other gums found in beans, and beta-glucan found in oats, may be particularly helpful in lowering triglycerides.

Suddenly switching to a high-carbohydrate, low-fat diet will generally increase TGs temporarily, but making the switch gradually protects against this short-term problem. A diet low in saturated fat (meaning avoidance of red meat and all dairy except nonfat dairy) is the best recommendation to reduce TGs and the risk of cardiovascular disease.

Some studies have found that increasing consumption of fish is associated with a lower risk of cardiovascular disease. Particularly significant are salmon, herring, mackerel, sardines, anchovies, albacore tuna, and black cod due to the high content of omega-3 fatty acids (EPA and DHA).

Lifestyle Modification

Exercise lowers TG levels. Smoking is specifically linked to elevated TG levels.

Obesity increases TG levels. Maintaining ideal body weight helps protect against elevated TG levels.

Nutritional Supplement Treatment Options

Many double-blind trials have demonstrated that fish oils containing **EPA and DHA** (mentioned above) lower TG levels. Recommended dosage is 3,000 mg per day of omega-3 fatty acids. Other sources of omega-3 fatty acids, such as flaxseed oil, DO NOT lower TGs.

Cod liver oil, another source of omega-3 fatty acids, has also been found to lower TGs. Cod-liver oil is less expensive than the fish-oil concentrates. However, cod-liver oil also contains relatively large amounts of vitamin A and vitamin D; too much of either can cause side effects. In contrast, fish-oil concentrates have little or none of these vitamins.

Omega-3 fatty acids from fish oil and cod liver oil have been reported to sometimes increase LDL cholesterol—the bad form of cholesterol. However, when garlic extract is added to fish oil, the combination still dramatically lowers TG levels but no longer increases LDL cholesterol. People who take fish oil may also need to take vitamin E to prevent the oil from undergoing potentially damaging oxidation in the body. For this reason, good quality omega 3 supplements should always contain vitamin E.

Pantethine is a byproduct of pantothenic acid (vitamin B5). Several clinical trials have shown that 300 mg of pantethine TID will lower TG levels. Pantothenic acid, which is found in most B vitamins, does not have this effect.

Niacin in high quantities – several grams per day - also lowers TG levels. Such quantities can cause side effects, including potential damage to the liver, and should be taken with great care. Non-flush niacin does not create the same side-effects but it is not clear as to whether it has the same effect on lowering TG levels.

In a preliminary trial, supplementation with 800 mg of calcium per day for one year resulted in a statistically significant 35% reduction in the average TG level among people with elevated cholesterol and triglycerides.

In a double-blind trial, 30 people with type 2 (non-insulin-dependent) diabetes received 200 mcg of chromium per day (as chromium picolinate) for two months and a placebo for an additional two months. The average TG level was significantly lower (by an average of 17.4%) during chromium supplementation than during the placebo period.

L-carnitine is another supplement that has lowered TGs in several clinical trials. However, the effect of carnitine is unpredictable, and some individuals have experienced an increase in triglyceride levels after receiving this supplement. Carnitine is best prescribed in the form of L-carnitine.

Several double-blind trials have evaluated the efficacy of fructo-oligosaccharides (FOS) or inulin (a related compound) for lowering blood cholesterol and triglyceride levels. These trials have shown that in individuals with elevated total cholesterol or triglyceride levels, including people with type 2 diabetes, FOS or inulin (in amounts ranging from 8 to 20 grams daily) produced significant reductions in triglyceride levels.

Several controlled studies have compared policosanol with cholesterol-lowering medications, such as statins, and have found policosanol similarly effective.

Botanical Treatment Options

Guggul, a mixture of ketonic steroids from the gum oleoresin of *Commiphora mukul*, is an approved treatment of hyperlipidemia in India and has been a mainstay of Ayurvedic herbal approaches to preventing atherosclerosis. Clinical trials indicate that guggul is effective in the treatment of high TGs; in one trial, serum TGs fell by 30.3%. Guggul's effect on TGs should be monitored for three to four months, and guggul may be taken long term if successful in lowering TGs.

Despite earlier good reports, recent double-blind clinical trials have found garlic to have minimal success in lowering triglycerides and cholesterol. Based on these findings, the use of garlic should not be considered a primary approach to lowering high triglycerides and cholesterol.

In a double-blind trial, people with moderately high triglycerides took a tincture of *Achillea wilhelmsii*, an herb used in traditional Persian medicine. Participants in the trial used 15–20 drops of the tincture BID for six months. At the end of the trial, participants experienced significant reductions in triglycerides compared to those who took placebo. No adverse effects were reported.

Fenugreek has been shown to lower total and LDL cholesterol and triglyceride levels in people with high lipid levels in preliminary trials. Mild diarrhoea and gas can accompany the first few days of fenugreek use, though it almost always fades as the person taking it adapts.

Psyllium seeds and husks have shown a modest ability to lower blood triglyceride levels in some, but not all, clinical trials. Further research is needed to assess the effect of psyllium on triglyceride levels more closely, as much of the study so far has focused on lowering cholesterol levels.

Intake of three cups or less of green tea daily has been shown not to affect blood triglyceride levels. Intake of four or more cups per day has been correlated with lower triglyceride levels.

Although primarily used to lower high serum cholesterol, red yeast rice extract, high in monacolins, has been found to significantly lower serum triglyceride levels.

Animal studies suggest the mushroom maitake may lower fat levels in the blood. However, this research is still preliminary and requires confirmation by controlled human trials.

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