Your Monthly Update

Dear Colleague

Welcome to the first newsletter of 2011from Pure Bio Ltd.

Did you know:

Researchers at the Hospital of the Universtity of Montreal found that those who are deficient in polyunsaturated fats – found in fish oils – are more likely to suffer from depression *(J Clin Psychiatry; 2010; doi: 10:4088/JCP.10m05966blu)*

The chosen topic for this month is:

Kidney Stones

Protocol Summary

Ranking	Nutritional Supplements	Botanical Medicine
Primary	Magnesium Citrate Potassium Citrate	
Secondary	IP-6	
Other	Chondroitin sulphate Vitamin B6 Vitamin E	

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.

A kidney stone is a solid piece of material that forms in the kidney out of substances in the urine. They may be as small as a grain of sand or as large as a golf ball. They are usually yellow or brown.

A stone may stay in the kidney or break loose and travel down the urinary tract. A small stone may pass all the way out of the body without causing too much pain. A larger stone may get stuck in a ureter, the bladder, or the urethra. A problem stone can block the flow of urine and cause intense pain.

There are four major types of kidney stones.

1. The most common type of stone contains **calcium**
2. A **struvite** stone may form after an infection in the urinary system. These stones contain magnesium and ammonia
3. A **uric acid** stone may form when there is too much acid in the urine. Uric acid stones indicate a need to minimise meat consumption
4. **Cystine** stones are rare and are familial

Treatment depends on the type of stone. For example, a medicine that helps prevent calcium stones will not work for a struvite stone. The diet changes that help prevent uric acid stones may have no effect on calcium stones.

Causes

Dehydration from reduced fluid intake or strenuous exercise without adequate fluid replacement increases the risk of kidney stones. Obstruction to the flow of urine can also lead to stone formation. In this regard, climate may be a risk factor for kidney stone development, since residents of hot and dry areas are more likely to become dehydrated and susceptible to stone formation.

A number of different medical conditions can lead to an increased risk for developing kidney stones:

- **Gout** results in chronically increased amount of uric acid in the blood and urine and can lead to the formation of uric acid stones.

- **Hypercalciuria** (high calcium in the urine) - an inherited condition - causes stones in more than half of cases. In this condition, too much calcium is absorbed from food and excreted into the urine, where it may form calcium phosphate or calcium oxalate stones.

- **Other conditions** associated with an increased risk of kidney stones include hyperparathyroidism, kidney diseases such as renal tubular acidosis, and some inherited metabolic conditions, including cystinuria and hyperoxaluria. Chronic diseases such as diabetes and high blood pressure (hypertension) are also associated with an increased risk of developing kidney stones.

- **People with inflammatory bowel disease** or who have had an intestinal bypass or ostomy surgery are also more likely to develop kidney stones.

- **Some medications** also raise the risk of kidney stones. These medications include some diuretics, calcium-containing antacids, and the protease inhibitor indinavir (Crixivan) - a drug used to treat HIV infection.

- **Dietary factors** and practices may increase the risk of stone formation in susceptible individuals. In particular, inadequate fluid intake predisposes to dehydration, which is a major risk factor for stone formation. Other dietary practices that may increase an individual's risk of forming kidney stones include a high intake of animal protein, a high-salt diet, excessive sugar consumption, excessive vitamin D supplementation, and possible excessive intake of oxalate-containing foods such as spinach. Interestingly, low levels of dietary calcium intake may alter the calcium-oxalate balance and result in the increased excretion of oxalate and a propensity to form oxalate stones.

Dietary Modification

Citric acid (citrate) is found in many foods and may also protect against kidney stone formation. The best food source commonly available is citrus fruits, particularly lemons. One study found that drinking 2 litres of fresh lemonade per day improved the quality of the urine in ways that are associated with kidney stone prevention. Lemonade was far more effective in modifying these urinary parameters than orange juice. In another study, drinking 2 litres of lemonade per day for an average of about four years decreased the recurrence rate of kidney stones by 87%.The lemonade was made by mixing 4 oz lemon juice with enough water to make 2 litres. A natural sweetener should be added to make the taste acceptable e.g. agave, stevia.

Drinking water increases the volume of urine. In the process, substances that form kidney stones are diluted, reducing the risk of kidney stone recurrence. For this reason, people with a history of kidney stones should drink at least two litres per day. It is particularly important that people in hot climates increase their fluid intake to reduce their risk.

Potassium reduces urinary calcium excretion, and people who eat high amounts of dietary potassium appear to be at low risk of forming kidney stones. Most kidney stone research involving potassium supplementation uses the form potassium citrate. When a group of stone formers was given 5 grams of potassium citrate TID in addition to their regular drug treatment for 28 months, they had a significantly lower rate of stone recurrence compared to those taking no potassium at all. The best way to increase potassium is to eat fruits and vegetables.

Bran, a rich source of insoluble fibre, reduces the absorption of calcium, which in turn causes urinary calcium to fall. In one trial, risk of forming kidney stones was significantly reduced simply by adding one-half ounce of rice bran per day to the diet. Oat and wheat bran are also good sources of insoluble fibre.

People who form kidney stones have been reported to process sugar abnormally. Sugar has also been reported to increase urinary oxalate, and in some reports, urinary calcium as well. Consequently, general recommendation is that people who form stones should avoid sugar.

Increased levels of urinary calcium increase the risk of stone formation. Consumption of animal protein from meat, dairy, poultry, or fish increases urinary calcium. Perhaps for this reason, consumption of animal protein has been linked to an increased risk of forming stones and vegetarians have been reported to be at lower risk for stone formation. As a result, many researchers believe that people with a history of kidney stone formation should restrict intake of animal foods high in protein.

Some citrate research conducted with people who have a history of kidney stones involves supplementation with a combination of potassium citrate and magnesium citrate. In one double-blind trial, the recurrence rate of kidney stones dropped from 64% to 13% for those receiving high amounts of both supplements.

Salt increases urinary calcium excretion in stone formers. In theory, this should increase the risk of forming a stone. As a result, some researchers have suggested that reducing dietary salt may be a useful way to decrease the chance of forming additional stones.

Increasing dietary oxalate can lead to an increase in urinary oxalate excretion. Increased urinary oxalate increases the risk of stone formation. Therefore kidney stone formers should reduce their intake of oxalate from food as a way to reduce urinary oxalate. Many foods contain oxalate; however, only a few—spinach, rhubarb, beet greens, nuts, chocolate, tea, bran, almonds, peanuts, and strawberries—appear to significantly increase urinary oxalate levels.

Drinking grapefruit juice has been linked to an increased risk of kidney stones in two large studies.

The findings of some studies suggest that consumption of soft drinks may increase the risk of forming a kidney stone. The phosphoric acid found in these beverages is thought to affect calcium metabolism in ways that might increase kidney stone recurrence risk.

Nutritional Supplement Treatment Options

Magnesium Citrate and Potassium Citrate - *1,600 mg daily potassium as citrate and 500 mg daily of magnesium as citrate.* Supplementing with a combination of potassium citrate and magnesium citrate may reduce the recurrence rate of kidney stones.

IP-6 - *120 mg daily*. IP-6 (inositol hexaphosphate, also called phytic acid) reduces urinary calcium levels and may reduce the risk of forming a kidney stone. In one trial, 120 mg per day of IP-6 for 15 days significantly reduced the formation of calcium oxalate crystals in the urine of people with a history of kidney stone formation.

Chondroitin sulphate may play a role in reducing the risk of kidney stone formation. One trial found 60 mg per day of glycosamionoglycans significantly lowered urinary oxalate levels in stone formers. Chondroitin sulphate is a type of glycosaminoglycan. A decrease in urinary oxalate levels should reduce the risk of stone formation.

Both magnesium and vitamin B6 are used by the body to convert oxalate into other substances. Vitamin B6 deficiency leads to an increase in kidney stones as a result of elevated urinary oxalate. Vitamin B6 is also known to reduce elevated urinary oxalate in some stone formers who are not necessarily B6 deficient. Years ago, the ***Merck Manual*** recommended 100–200 mg of vitamin B6 and 200 mg of magnesium per day for some kidney stone formers with elevated urinary oxalate.

As with calcium supplementation, it appears important to take magnesium with meals in order for it to reduce kidney stone risks by lowering urinary oxalate. While the effective intake of vitamin B6 appears to be as low as 10–50 mg per day, certain people with elevated urinary oxalate may require much higher amounts, and therefore require medical supervision. In some cases, as much as 1,000 mg of vitamin B6 per day (a potentially toxic level) has been used successfully.

Vitamin E – *200 i.u. daily*. In a double-blind trial, supplementation with 200 i.u. of synthetic vitamin E per day was found to reduce several risk factors for kidney stone formation in people with elevated levels of urinary oxalate.

Botanical Treatment Options

Pumpkin seeds - Two trials from Thailand reported that eating pumpkin seeds reduces urinary risk factors for forming kidney stones. One of these trials used 60 mg/kg body weight—the equivalent of only a fraction of an ounce per day for an adult. The active constituents of pumpkin seeds responsible for this action have not been identified.

Juniper berries stimulate the kidneys, and destroy bacteria in the kidneys, bladder, and bile ducts. Any person who has built up waste, crystallization, and stones in their kidneys will also have bacteria, and possibly pus. Juniper berries are a priority for any effective kidney cleansing routine or as a natural remedy for kidney stones.

Uva ursi (Bearberry) is one of the top herbs for stimulating and detoxifying the kidneys. The parts used are the leaves. This herb is another staple for any kidney cleansing formula or herbal remedy for kidney stones.

Dandelion leaf is an excellent herb for stimulating the kidneys.

Cornsilk, Horsetail, and Parsley - These herbs are all powerful kidney simulators and detoxifiers. It is important to only use corn silk from organically grown corn, as corn is one of the most heavily sprayed crops.

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