Orthopod®
Enabling your orthopaedic practice

A Patient's Guide to

Chronic Pain and Nutrition

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Introduction

Your nutrition has a major role in how you feel pain. What you eat will give your body the chemistry it needs to make an inflammatory response. Inflammation is what your immune system creates when there is some kind of insult or damage to your tissue. Inflammation is not the only cause of pain but it can make your pain feel more intense and last longer.

This guide will help you understand

- **how nutrition affects your pain**
- **what nutritional changes you should make**
- **types of supplements to consider**
- **the role of nutraceuticals**

Basic Information

The amount of inflammation that occurs in your body can be affected by what you eat. This includes food and drinks as well as other chemical exposures. Environmental pollution and artificial colorings and preservatives can also cause painful inflammatory responses in your body. Eating foods that leave you low in many *micronutrients* (vitamins and minerals) can make it more likely that your body will produce pain chemistry.

Fat cells in particular are a source of inflammatory chemistry. And for those who are overweight, chronic low back and hip, knee, or foot pain may be caused by where and how the bones and joints are supporting that weight.

The chemistry that creates pain signals in your body is increased by starchy and sugary foods. It's can be decreased by protein foods. Controlling inflammation and therefore pain is done best by avoiding carbohydrates you don't need. This means sweets and many of the grain products. Meals that regularly include lean meat, fish, and eggs are essential for controlling pain chemistry. Portion control is also central in controlling inflammation, and to successful weight loss. Portion control means not eating more food than you are using for fuel on a daily basis.

Research suggests that losing as little as seven to 10 per cent of your current body weight can help. Such a weight loss can change your body chemistry for the better. These changes can help decrease physical pain. Diet and exercise are crucial. Medication, herbs, and nutritional supplements can help but won't be enough without your efforts to improve your muscle tone and lose extra fat.

Weight Loss

There is a lot of mistaken information about how to lose weight. Ninety per cent of people regain fat once lost. Preventing re-gain is crucial to long-term health. Recent interest in the epidemic of obesity has resulted in new information about how you can successfully lose weight and keep it off long-term. It's important that you lose fat in a healthy way. The goal is to keep it off the rest of your life.

Changing how you eat, drink, and exercise can be hard but the results are always very rewarding. All the changes you make to reduce your pain by losing weight will help every part of your life. This includes your ability to think clearly, your memory, and your moods. Eating to reduce pain can also help you avoid

illnesses of all kinds, including heart disease, diabetes, and cancer. Avoiding foods with artificial colorings, preservatives, and other chemical pollution allows your body to put its energy toward healing.

There is no single diet that will work well for everyone who needs to lose weight. Food choices should be made to allow for your personal preferences. Try to limit foods that are high in fat. Get plenty of lean protein. Increase your intake of vegetables and fresh fruit Drink plenty of of clear liquids. These are the basic rules of any healthy diet.

For some people using meal replacement products can be useful. However learning to eat the right amount of home-cooked meals will always be part of complete recovery from obesity. Following structured meal plans and regular contact with supportive professionals and friends or family will also make weight loss success more likely.

What nutritional changes should I make?

What To Do

- Lose excess fat
- Eat two or more cups of fresh vegetables daily
- Avoid sweets and reduce starchy foods
- Increase clean, lean meat, poultry, fish, and eggs
- Use olive oil and snack on fresh fruit, nuts, and seeds
- Avoid artificial colorings, preservatives, hormones, antibiotics, and herbicide and pesticide residues in your food
- Take a good quality multiple vitamin/ mineral supplement every day
- Think about other specific nutraceuticals for your own specific needs

What nutritional supplements should I consider?

There are some nutritional supplements that can help with weight loss. They are safe and effective when used as recommended. None are a substitute for changing eating and exercise habits. Research is showing that quite a few herbs and nutritional supplements are good options for pain control. Comparing these nutraceuticals to non-steroidal anti-inflammatory drugs (NSAIDs) reveals that some of them are as effective at pain relief while having few-to-no side effects. These natural products often cost less than many drugs.

Anti-inflammatory Herbs

Willow bark (Salix spp) is the original source of the salicylic acid used to make aspirin. A study was done of 228 people with low back pain compared willow bark (standardized for 240 mg salicin) with an antiinflammatory drug (Vioxx). (Vioxx is no longer on the market due to dangerous side effects for some people.) However, the study showed these medicines were equally effective. But willow bark was safer and 40 per cent less expensive. The daily dose of willow bark products should not have more than 240 mg of salicin. The best products will include other parts of the whole plant.

Willow bark works in multiple, complex ways to relieve pain. It is an *antioxidant*. Antioxidants are molecules that slow down or prevent potentially harmful chemical reactions in the body. Willow bark slows the production of at least three pain-causing chemicals. Except for rare allergy, no adverse effects are known. It can be blood thinning so it is not advised for use during pregnancy or with anti-coagulant medication.

Boswellia (Boswellia serrata) is a well-researched plant medicine. It is an effective anti-inflammatory pain reliever. It also reduces fever and helps with muscle relaxation. It works on many tissues including joints, the

digestive tract, the colon, and the airways. It reduces swelling in cases of brain cancer. It does not cause the sort of stomach irritation and ulcers that are common side effects of many NSAIDs. Studies show it is very safe even after many weeks of use. There are only rare side effects such as mild nausea, loose stools, or skin rash.

The usual dose is about 150 mg three times daily. The product should contain 37.5–65 per cent boswellic acids.

Ginger (Zingiber officinale) is familiar as a spice and food. It also has a long history of use as an anti-inflammatory and anti-nausea medicine. It reduces the production of three different kinds of chemicals that can lead to inflammation. Ginger has been shown to safely reduce the pain and disability associated with arthritis, muscle aches, and migraine headaches.

Ginger appears to have a protective benefit against stomach ulceration. This is different from over-the-counter or prescribed NSAIDs. Ginger doesn't cause any major side effects. It has mild effects that may interfere with blood thinners and drugs used to treat gallstones.

The recommended doses for the treatment of body pain has ranged from one gram (one-half teaspoon) of powdered ginger to up to 50 grams per day of fresh or lightly cooked root.

Devil's Claw (Harpagophytum procumbens) has a long history of use in the treatment of musculoskeletal complaints. Recent research has shown that it is useful for relief of mild to moderate pain. Twelve clinical trials found Devil's claw to be both safe and effective. It has no more adverse effects than a placebo (sugar pill). These studies showed that people had at least as much pain relief from the plant medicine as they got from commonly used non-steroidal anti-inflammatory drugs (NSAID). And they had fewer uncomfortable side effects than with the NSAID. Less than 10 per cent of users reported mild diarrhea or GI upset. Even fewer had some dizziness. Devil's claw may increase the blood thinning activity of drugs taken for anti-coagulant therapy.

Devil's Claw usually costs less than NSAIDs. The most useful products will have standard amounts of harpagosides. The effective dose for most people is between 30 mg and 60 mg of hapagoside daily. Treatment should continue for at least four weeks. Many people will still improve eight or more weeks after starting treatment.

Bromelain is a mixture of digestive enzymes from the stem of the pineapple plant. It reduces pain and inflammation caused by surgery, arthritis, trauma, or sports injury. It helps to heal and regenerate the digestive lining of the stomach. The usual dose of bromelain is two or three 2,400 mcg capsules. This is taken two or three times daily on an empty stomach. Studies have shown that for larger people, the best pain relief comes with larger, more frequent doses.

Bromelain reduces edema and inflammation. A study of people with knee pain showed bromelain improved stiffness, physical function, and overall psychological well-being. Other studies show it increases healing as well.

Studies have shown that bromelain can be as effective and a safe alternative to NSAIDs in the treatment of painful episodes of osteoarthritis of the knee. Results of these studies showed that people with sinusitis who took bromelain had better breathing and decreased mucosal inflammation.

Bromelain can cause an allergic response in some people. These are individuals who are also allergic to pineapple, honeybee venom, or olive tree pollen. No toxic effects have been seen using recommended doses for as long as six months. Not enough research has been done to know if bromelain is safe for pregnant or nursing mothers.

Bromelain may increase the action of anticoagulant drugs. It will also increase the action of certain antibiotics. Bromelain helps the cancer drugs 5-fluorouracil and vincristine to work better.

Curcumin (Curcuma longa) is the yellow-colored chemical of the turmeric root. Curcumin (or tumeric) acts as a powerful antioxidant. Curcumin also has antiinflammatory effects equal to some NSAIDs in acute injuries. It is also potent in chronic inflammation. Curcumin can stop a number of different inflammatory molecules. It assists with wound healing by helping to repair the lining of the colon.

People using up to 8,000 mg of curcumin per day for 3 months found no toxicity from it. Five other research studies showed people could use 1,125-2,500 mg of curcumin per day without problems. Turmeric is not advised if you have certain health problems. These include bile duct blockage, a blood-clotting disorder, a history of stomach ulcers, or gallbladder disease. Turmeric may increase the risk of bleeding or increase the effects of blood thinning drugs. It has been used for hundreds of years in East Indian and Asian cooking. Even so, there isn't enough research yet to say whether turmeric or curcumin is safe to use by pregnant women or nursing mothers.

Quercetin is one of the most important plant medicines we have studied. It slows down the production of histamine and other inflammatory chemicals from white blood cells. It reduces acute inflammation and the swelling and pain of arthritis.

There are currently no reported adverse reactions to quercetin. There is not yet enough safety data available to recommend the use of quercetin during pregnancy or while nursing a child.

Nutrients

Vitamin D (cholecalciferol): New research shows a big increase in the number of people in the United States who don't have enough Vitamin D. Low levels of Vitamin D are especially likely in people with chronic musculoskeletal pain, limb pain, and low-back pain.

People with too little vitamin D can take an oral (by mouth) pill to supplement their vitamin D. This can have anti-inflammatory benefits. Treatment with vitamin D can safely lead to a big decrease in musculoskeletal pain for many people. It is best to have a yearly blood test to measure your vitamin D levels. Then it can be adjusted as needed with supplements. People taking moderate doses of vitamin D (adult range 4,000 – 10,000 IU per day), should have blood levels of calcium measured every six or so months. Too much blood calcium is the best indicator of vitamin D excess. High doses of vitamin D (up to 100,000 IU per day) have been safely used during pregnancy. Testing of calcium levels in the blood is needed to check for high blood calcium.

How much vitamin D each person requires differs depending on many things. Factors include sun exposure, skin color, food choices, and digestive health. Currently some medical authorities are saying that adult males need about 4,000 IU per day. This is a much higher dose than has been set in the recent past.

Most people would have to take a pill form of Vitamin D to get that much. Otherwise, you would have to have most of your skin exposed to the sun for hours every day. This would be how our ancestors lived. It explains why our bodies need this much vitamin D. In general, a safe dose for most people is 2,000 to 4,000 IU daily. Before and after testing of vitamin D and calcium blood levels is a good idea.

High doses of vitamin D should not be taken by people who are also taking thiazide diuretics. Likewise anyone who has a vitamin D hypersensitivity syndrome should avoid too much vitamin D. This includes people with primary hyperparathyroidism, adrenal insuf-

ficiency, hyperthyroidism, hypothyroidism, or granulomatous disease. Granulomatous diseases include sarcoidosis, Crohn's disease, or tuberculosis.

Niacinamide is a form of vitamin B3. It was first shown to be highly effective in the treatment of osteoarthritis more than 50 years ago. A recent well-designed study found that niacinamide therapy improved joint mobility. It also reduced objective inflammation. This was measured by erythrocyte sedimentation rate (ESR). Therapy with this nutrient decreased the impact of the arthritis on the activities of daily living. It also allowed people to decrease their use of pain medication.

Side effects are rare when daily doses are kept below 3,000 mg per day. However it is a good idea to check liver enzymes after three months of treatment. After that, the liver can be tested once a year. People notice pain relief after two to six weeks of treatment. Many people notice a decrease in anxiety levels as well. This may be due to the binding of niacinamide to brain cells. The result is a calming effect. A dose of niacinamide 750 mg given orally four times per day works better than 1,000 mg three times per day.

MSM (Methylsulfonylmethane) is a fairly popular nutritional supplement. It is used to treat the symptoms of allergies, interstitial cystitis, and joint pain. Research supporting its use is very limited. MSM is fairly inexpensive. It appears safe, especially for short-term use. One clinical trial used 2,600 mg for 30 days with no major adverse effects.

Glucosamine and *chondroitin sulfate* are the building blocks used to make cartilage. Supplements will help slow the break down of joint cartilage that can occur with arthritis. Clinical trials with glucosamine and chondroitin sulfates have shown positive results for people with arthritis pain of the hands, hips, knees, jaw, and low-back.

Both treatments are safe for many years of use. The rare side effects include allergy and mild gastrointestinal upset. Most people see the change in their joint symptoms after four to six weeks. The effects last for as long as you keep taking it. Using glucosamine and chondroitin sulfate appears to safely reduce the pain and disability from osteoarthritis. At the same time, there is less risk of cardiovascular illness and death. This is in contrast to anti-inflammatory drugs that increase your risk of having serious, even fatal heart disease.

The adult dose of glucosamine sulfate is generally 1,500-2,000 mg per day. It is taken in divided doses. The dose of chondroitin sulfate is around 1,000 mg daily.

Nutraceuticals That Help You Lose Weight

The idea of taking a pill to solve our problems usually sounds good. This seems true no matter how many times we try them and they fail or even cause us harm. Many specific nutrients are very valuable, for many reasons, before, during, and after a weight loss effort. But there's no pill that can cause weight loss if you do not also change how you eat and exercise.

The following are some safe and effective nutraceuticals. They can help you in your efforts to change your lifestyle habits. These supplements will help you make the most of your weight loss efforts.

Calcium

Studies have shown that people whose diets have the most calcium are least likely to be overweight. More research is needed to understand the links between calcium intake and body fat. For now, these findings remind us how important it is to get enough calcium every day, especially while eating to lose weight.

The dairy industry has turned these observations into an advertising campaign for milk.

Milk products are difficult for many people to digest. They add calories and fat to your diet. We know humans don't actually need dairy products to get enough calcium. We were around for a long time before animals were tamed in order to get at their milk. You probably aren't making soup and chewing on the bones of the animals you eat. This is what our ancestors did to get calcium. Today, eating lots of dark leafy greens (like broccoli, which is very high in calcium) and taking a supplement is your best bet for having all the calcium you need.

Adult men and women, 50 years of age and younger, should take in about 1,000 mg - 1,200 mg/day of calcium. Older men and postmenopausal women should get 1,200 mg – 1,500 mg/day of calcium. Taking a supplement containing at least 10 mcg (400) IU/day of vitamin D will help to make sure your calcium is absorbed in your gut.

5-Hydroxytryptophan (5-H PT)

This amino acid is a safe and effective support for increasing serotonin. Serotonin is a key brain chemical that helps you feel calm and satisfied. It can help you lose fat by reducing carbohydrate cravings. It helps stop eating binges and therefore reduces calorie intake. It can trigger a feeling of fullness so you have a greater sense of satisfaction from your meals. This product will not help you lose weight if you don't choose the proper amount of healthy foods and if you don't exercise regularly. The recommended dose is 100 mg three times daily. Take it 20 minutes before meals for at least four weeks.

A condition known as *Serotonin Syndrome* can result if your body produces excessively high levels of serotonin. This syndrome can also occur if your body can't break down serotonin fast enough. Symptoms include confusion, fever, shivering, sweating, diarrhea, and muscle spasms. This syndrome does not occur when 5-HPT is taken alone. There have been some reports of this syndrome when a related amino acid called L-tryptophan was used with prescription drugs that inhibit serotonin activity. These drugs are called monoamine oxidase (MAOs). MAOs break down molecules of serotonin.

You should stop taking an MAO-inhibitor for at least four weeks before beginning therapy with 5-HTP or any other serotonin-active substance. Also, you should not take 5-HTP at the same time as any prescription anti-depressant. For example, don't take 5-HTP if you are taking Prozac, Zoloft, or Paxil unless supervised by a physician. Do not stop or adjust the doses of any prescription medication without first talking with your physician.

Possible side effects include a mild nausea that doesn't last. This is more likely to occur at higher doses, in the range of 200 mg to 300 mg. Treatment of depression and insomnia require smaller doses, so this isn't usually a problem. Even if nausea develops, it disappears for most people in two to 14 days. Consider using ginger tea or capsules to decrease the nausea.

L-Theanine

Theanine, an amino acid found in green tea, helps you relax. When you are more relaxed, you are more in charge of your behaviors. You have better control if you have the food cravings that lead to increased weight. It is safe and fast acting. The adult dose is between 50 to 200 mg of L-theanine. In about 30 to 40 minutes you will notice feeling more alert. You will be in a calm, relaxed state. These feeling usually last from eight to 12 hours.

There are no known safety problems with L-theanine taken in doses up to 600 mg every 6 hours. In Asian countries women have been drinking the teas that theanine is extracted from for hundreds of years with no problems. However, there is no research on L-theanine in capsule form. So we can't state it is safe for use by pregnant women and nursing mothers.

Green Tea Extract

Green tea has at least two different chemicals that work together to increase the amount of calories you burn in a day. One study showed that people taking green tea extract containing at least 90 mg epigallocatechin-3gallate (EGCG) burned 266 more calories per day than those who didn't take the green tea extract. The supplement was taken three times daily. Other chemicals in green tea have also been shown to reduce how much fat is digested from a person's meals.

Green tea is generally thought to be a safe, non-toxic drink. There are no bad side effects. There is caffeine in it. Drinking too much can cause irritability, insomnia, nervousness, and fast heart rate. Green tea extracts in capsules may be caffeine free. Many health care providers advise pregnant women and nursing mothers to avoid caffeine. Some studies suggest large amounts may harm a developing fetus. Some infants may become over stimulated by caffeine in their breast milk.

Summary

Nutrition is another key factor managing chronic pain. Talk with your healthcare provider about help with a healthy diet. There are many reliable resources available to help you achieve a healthy diet.

Naturopathic doctors (NDs) are available to help patients develop healthier nutritional habits for the spine. Naturopathic physicians practice the art and science of natural health care.

Registered dietitians are another source of nutritional counseling. The ongoing support of a progressive nutritionist can help you start new, healthy habits that will become a permanent part of your daily life.

Notes