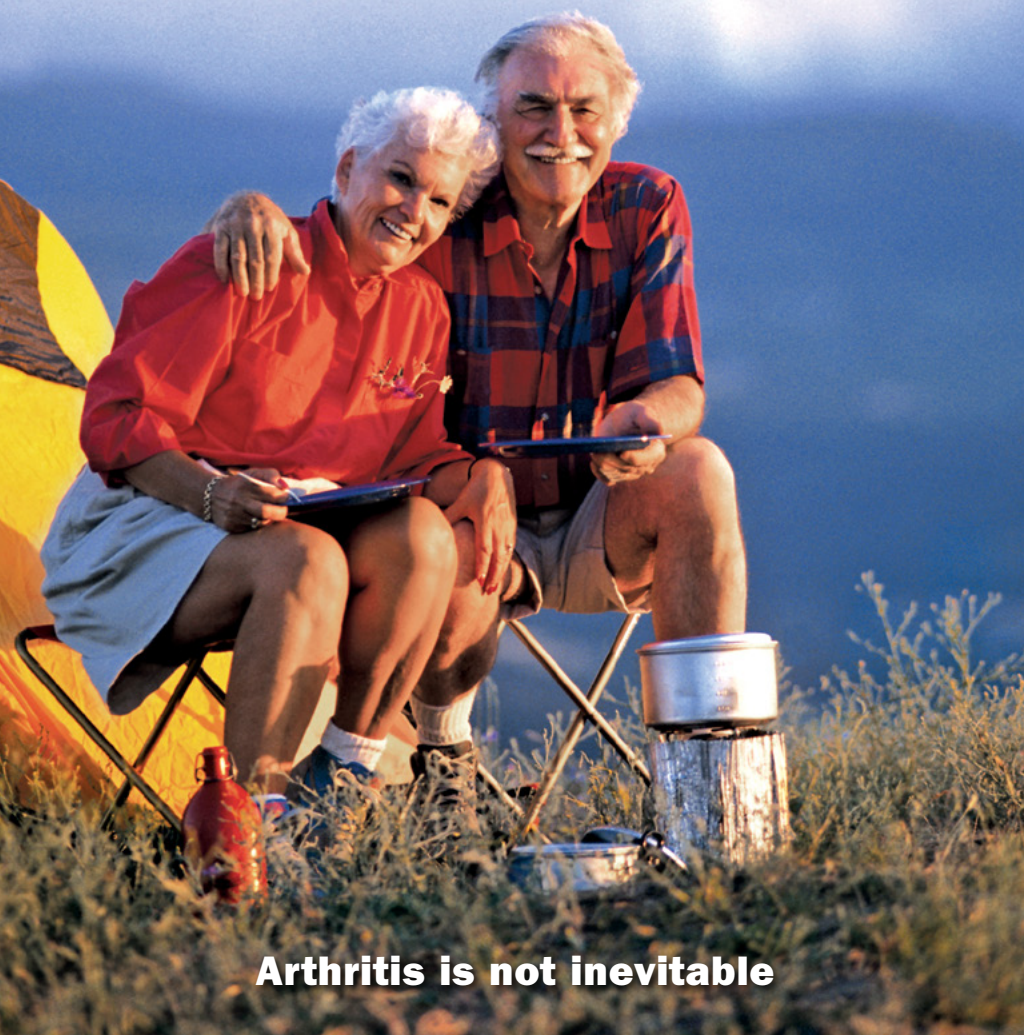


– Martin Stone, BSc. MH. –

The key to **Natural** **Arthritis** **Treatment**



Arthritis is not inevitable

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*Arthritis
is not
inevitable.*

What is arthritis?

The term arthritis refers to the chronic inflammation of joints throughout the body. Arthritis is one of the most rapidly growing chronic conditions in North America. It is estimated over three million Canadians suffer from osteoarthritis, the most common form of arthritis, also known as wear and tear arthritis and degenerative joint disease. This form of arthritis classically affects the knee joint and the hips and other weight bearing joints.

Other forms include rheumatoid arthritis and gouty arthritis. Rheumatoid arthritis is defined as an auto-immune condition where the immune system of the patient attacks joints in the body commonly starting with the hands with the end consequence of deformity in the joints and lack of mobility.

Gouty arthritis often develops in families, sometimes from genetic mutation, resulting in production of increased amounts of xanthine oxidase. This enzyme governs how well we excrete urea, the primary constituent of urine. Another common reason for gout has to do with diet and dehydration.

Consumption of a high protein diet coupled with chronic dehydration reduces the kidneys ability of doing their job of regulating acid/alkaline balance in the body. As a consequence, an increased amount of uric acid crystals are deposited in joints typically starting with the big toe but can spread easily to other joints and areas of the body if left untreated.



What causes osteoarthritis?

Osteoarthritis occurs as a result of wear and tear on the joints and cartilage often in weight bearing areas of the body. This includes the knee and hip joints. This condition most often starts to affect people past the age of 40. It frequently starts with stiffening in the knees and as it progresses over the years, chronic pain and a grating sensation in the joints such the hips, fingers and spine generally are reported. These beginning symptoms are generated as a direct outcome of destruction of the cartilage and the inflammation that results.

As we age, we are no longer able to repair the damage done on a daily basis

to our joints quickly enough. Until about the age of 40, our bodies are able to keep up with the production of materials needed to repair the daily damage in our joints. After 40, we have a harder time to produce enough of a special collagen called glycosaminoglycans (GAGs) that is used as a building block for cartilage production.

As the destruction of cartilage progresses, inflammation starts to occur, which in turn causes hardening of the cartilage and in some cases, formation of bone spurs in the joint. By this time, inflammation, pain, lack of mobility and in some cases joint deformation has occurred. Characteristically, this is the time that most people decide to do something about their arthritis problem.

Temporary relief with pharmaceuticals

The most commonly used pharmaceutical drugs usually involve analgesics (drugs used to manage pain without inducing unconsciousness) for pain control and prescription drugs called non-steroidal anti-inflammatory drugs also known as NSAIDs.



While this conventional medical approach for treatment of osteoarthritis provides short-term relief from pain and inflammation of joints, unfortunately it also contributes to further cartilage destruction along with additional joint damage. There is also an increased potential for gastrointestinal ulceration. In other words, this treatment is generating more damage and is triggering the

almost 20 years. It was reported that there was a five times increased risk of bleeding and in elderly patients over the age of 75, the risk was 27 times greater for increased risk of bleeding. This statistic is particularly troubling because of the increasing likelihood of arthritic symptoms occurring in people over the age of 60, with the consequent use of NSAIDs.

Use of non-steroidal anti-inflammatory drugs should be only for short periods of time...

condition to worsen the longer you use it. Use of non-steroidal anti-inflammatory drugs should be only for short periods of time in order to avoid the many side effects that are created as a result of long-term use. Unfortunately this is a worldwide and widespread problem. The use of oral NSAIDs even for a relatively short period of time carries with it a large price tag in declining health.

Several European studies reported shocking side effects even after as little as two months of use. They reported that one in five patients had a stomach ulcer without symptoms, one in 70 patients had a painful ulcer, one in 150 patients had a bleeding ulcer and one in 1200 patients died from gastric hemorrhage.

A Danish study tracked 207,000 patients using NSAIDs on a regular basis for

In the United States last year 107,000 people were hospitalized due to intestinal side effects of NSAID use and of these 16,500 died. 1900 Canadians die from complications from the use of these drugs every year. This price is high enough, but we also must take into account the other side effects which include abdominal pain, bloating and gas, diarrhea and in many cases liver damage. It is obvious that many arthritis patients suffer and in some cases die needlessly and create additional health issues because of a lack of information about alternative methods of treatment. As a result, many osteoarthritic patients use NSAIDs for a much longer time than they should because they don't know there are other effective, alternative treatments for this condition.

Prevention vs. intervention

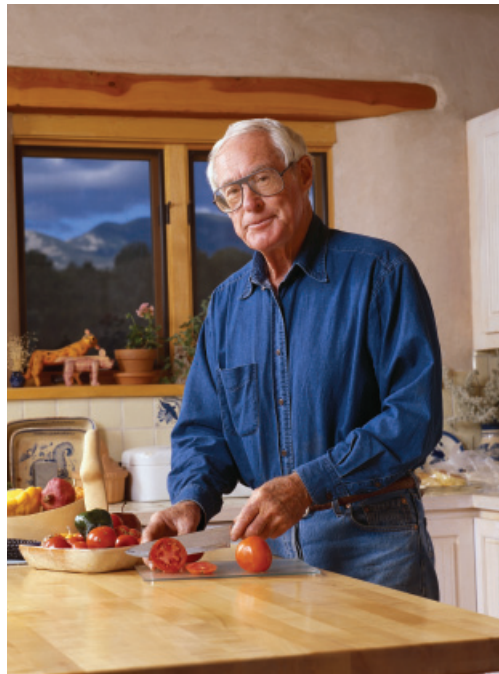
All of us remember the old saying, “An ounce of prevention is worth a pound of cure.” Prevention is always much easier and much more effective than intervention or treatment of any chronic condition. This is especially true when dealing with osteoarthritis. It is important to remember that osteoarthritis is a condition that takes years, in many cases, decades to create.

Often the very first signs of osteoarthritis start to occur 10 or 20 years prior to the full onset of all the symptoms, which include pain, inflammation, deformity, and limitation of joint motion. In the vast

What we eat often plays a large role in setting the stage for the start of arthritis.

majority of cases, osteoarthritis can be avoided through use of alternative methods that include proper nutrition, hydration and the use of specific nutritional supplements that reduce the damage done to aging joints.

What we eat often plays a large role in setting the stage for the start of arthritis.



The typical North American diet contains an overwhelming amount of cooked, processed and other acid forming foods. A healthy diet should be 70% alkaline and 30% acidic. Instead

of eating cooked foods that are acid forming, a diet of mostly raw, fresh vegetables, fruits and reducing the consumption of meats would be excellent to help reduce acid formation through out the body. Unfortunately, the average North American diet has reversed this ratio. Combine this with a chronic



dehydration problem from lack of water consumption, and a lack of absorbable minerals in the diet from mineral depletion of soils, a recipe for the formation of arthritis is created. For the majority of the population, coffee and soda drinks are the drinks of choice, not water. These products have a diuretic action and promote further dehydration creating a cycle of acid formation. We need water to maintain the basic functions of our body.

For example, in order for protein to be utilized effectively, it must go through a process called hydrolysis, which needs a large amount of water in the body to complete. Incomplete digestion increases acid formation and when the blood supply becomes too acidic, hemoglobin starts to lose its ability to carry oxygen to cells. As a consequence of reduced digestive capability, many foods, notably

protein, contribute further to this overall acidic condition due to unfinished digestion.

Calcium, one of the most important alkalizing minerals in the body, will also start to fall out of solution, which can start to affect the repair of joints. Calcium excretion will increase as an end product of a protein rich diet. As the body becomes more acidic, it will try to reduce acid production as best it can. The usual place this process begins is in the reduction of stomach acid. This combination of dehydration and poor diet eventually increases the overall acidity of the body and blood supply and this sets the stage for arthritis.

Many researchers believe that arthritis is increasing worldwide as a direct result of the increased life span in the contemporary world as well.

Arthritis is not inevitable, even if there is a family history of this condition

Arthritis is now North America’s leading cause of disability and is projected by the CDC (Center for Disease Control) to affect nearly 60 million Americans (20% of U.S. population) by the year 2020. According to Statistics Canada, 85% of the population over 70 and 18.5% of Canadians over 16 has or will have arthritis.

Over three million people suffer from osteoarthritis and two million people are on arthritis medication. The side effects of these drugs are responsible for more deaths than all the illicit drug use in North America. By far the most prevalent type is osteoarthritis, accounting for one half of the 40 million Americans currently suffering from these conditions.

An Arthritis Foundation survey conducted in 2002 revealed that 53 percent of respondents were showing some symptoms of arthritis, yet many weren’t aware of the significance. The survey also found that 67 percent of respondents were at risk for arthritis, but 52 percent didn’t know it. More than half said they had no plans to see their doctor about the health of their joints.

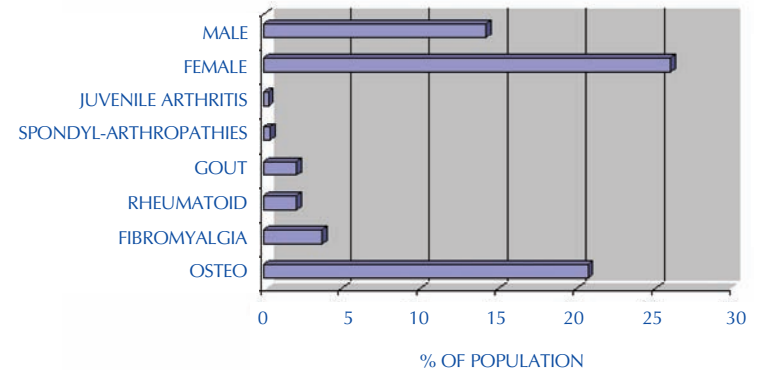


Prevention and when to start

As an effect of the dramatic increase in the incidence of osteoarthritis in the general population, there has been ever-increasing interest in methods to prevent this condition. Consequently, vast amounts of research have been going on for the past 20 years or more to find effective and safe constituents that can act as a preventive for osteoarthritis.

Arthritis - the numbers

This chart represents the percentages of the North American population who develop various type of arthritis, including females compared to males.



When should you start a prevention program? Right away is the short answer. Anyone over the age of 35 will benefit from a preventative approach to arthritis management. It is much easier to prevent than it is to treat.

The key to natural arthritis treatment

The best approach for treatment of arthritis in general and osteoarthritis specifically must include ingredients that not only provide pain relief but also promote the rebuilding and rehabilitation of the joints. The formula should be the conclusion of years of research published in numerous peer reviewed scientific and medical journals from

around the world. Each ingredient must be carefully chosen to encourage the repair, prevention and reduction of the common symptoms of osteoarthritis not just provide pain relief.

Not only are the ingredients of paramount importance, the form in which these ingredients are given to the body is also crucial to its effectiveness. For this reason, a liquid format is the most effective method of ensuring its absorption.

After all, if the ingredients are not absorbed it makes no difference how good the formula is.

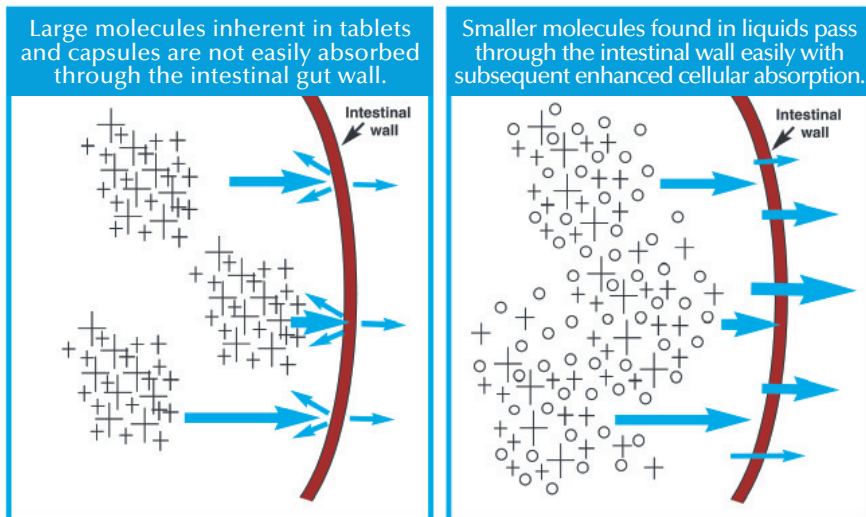
Why are liquids more easily absorbed? In order for any nutrient to pass through the intestinal gut wall, it must be transferred through something called a recep-

tor site. There are receptor sites for every different kind of nutrient the body needs and only that precise nutrient will be able to pass through its particular receptor site, similar to how a particular key will only work in a specific lock.

To ensure the maximum level of absorption it is necessary that each of the constituents be able to come into contact with the highest number of receptor sites. In order to achieve this, the surface area of all the constituents has to be very large, enabling the largest number of constituent molecules to come into contact with the largest number of receptor sites. By employing a liquid, it is made certain that the absorption rate

will be dramatically increased. As an effect of this increased absorption, faster and more effective results are realized. You could even add it to a glass of water and take it with your other vitamins. Pills and caplets on the other hand contain excipients, fillers and in many cases, a wax coating to help maintain the pills shape and cohesiveness. In these cases, a supplement can pass through the entire digestive system without breaking down therefore having very little effect due to lack of absorption. Research has reported that liquid formulations are much more easily absorbed and utilized than any other form. Gelatin capsules are the next most beneficial format for supplement absorption.

The difference in absorption rates between pills or capsules and liquid formulas.



Dosage concentration is crucial

In order for a therapeutic effect to occur, the active ingredients must be present in a high enough dose to be effective. Many times, people will use the medicine but at a reduced dose to make it last longer. Consequently they never achieve the therapeutic dose and the effectiveness of the formula is reduced. The key is to be effective at even relatively small doses. Concentration is key to ensure that the therapeutic dose is easy to achieve and cost-effective to maintain. There shouldn't be any fillers and no added ingredients. The therapeutic dosage is achieved even if you use only one dose per day.

What an effective arthritis formula should contain

Each of these constituents has been included for very special reasons. While these individual constituents have specific and scientifically validated properties, when combined with other particular ingredients, synergism occurs. In other words, the effect of the formulation is much greater than the effects of each individual ingredient; the sum is greater than its parts.

The formula will not only give effective pain relief from arthritis, it will provide the needed nourishment to rebuild and maintain healthy joints throughout the body. This predictable outcome comes about as a direct result of the inclusion of the most potent and effective anti-inflammatory ingredients combined with high quality glucosamine sulfate, which has itself, been the subject of over 300 scientific studies and more than 20 double blind research papers.



Scientific research & validation

These are the ingredients that should be included in an effective arthritis formula.

- ◆ Glucosamine Sulfate or Glucosamine Hydrochloride
- ◆ Turmeric Extract
- ◆ Methyl Sulfonyl Methane (MSM)
- ◆ Devil's Claw Extract
- ◆ Hydrolyzed Gelatin
- ◆ Bromelain Extract
- ◆ Boswellia Extract

The following information details the remarkable properties of each of these constituents and the scientific research gathered from around the world that substantiates their use for arthritis treatment.

Let's examine the following ingredients more closely.

Glucosamine Sulfate (Nutri-Flex Original Formula)

Glucosamine Hydrochloride (Nutri-Flex Vitamin D Formula)

Most of the research to date concerning glucosamine was conducted at least 10 years ago, on the sulfate form of this amino sugar. Although large numbers

of studies were conducted on the sulfate form, this does not necessarily mean that other formats of glucosamine including hydrochloride are not effective. The sulfate format of glucosamine was studied because the initial studies were largely funded by an Italian glucosamine sulfate manufacturing company.

Typically most research is conducted immediately after the discovery of or as a result of increased interest in any new molecule, herb or supplement. This does not automatically mean that the best form or formats of the new product are initially being studied. An example of this was seen in the early research on vitamin B-1 centered on thiamin mononitrate. Subsequent research on thiamin hydrochloride demonstrated equal bioavailability and superior safety. It turned out that ingestion of thiamin mononitrate led to the formation of small amounts of carcinogenic nitrosamines in the stomach, while thiamin hydrochloride proved to be innocuous with the end result that B1 hydrochloride formats are found predominantly in the marketplace today despite the fact that it was not the initial format studied.

Indeed new research conducted at Johns Hopkins University and the University of Toronto has suggested that the hydrochloride format of glucosamine is not only effective and at least equally bioavailable to the sulfate format, it possibly could be even more bioavailable.

Another aspect to consider is that glucosamine hydrochloride may be the best form after all as it has a slightly higher concentration of glucosamine in this format, 83% as compared to the 80% for glucosamine sulfate.

There is a point of interest here; whether it be glucosamine sulfate or glucosamine hydrochloride, both the sulfate and hydrochloride portion of the glucosamine is discarded and only the glucosamine portion is used in the joint. While glucosamine re-hydrates cartilage, the effect is transient and temporary. Glucosamine is taken into the chondrocytes, cells that are buried within cartilage that manufacture new cartilage. In the chondrocyte, glucosamine is used in the synthesis of the acidic mucopolysaccharide, hyaluronic acid. On a cellular level, there is no advantage to using glucosamine sulfate as the sulfur found in glucosamine sulfate is not used to help manufacture new cartilage. The higher the percentage of levels of glucosamine the more effective it will be.

In addition, glucosamine hydrochloride

has a longer shelf life and is more stable meaning that it is less likely to break down or become less bioavailable between the time it is manufactured and the time it is actually utilized by a customer or patient. It is well understood that hydrochloride formats are much more easily digested and less irritating to human digestive systems whereas sulfates and chlorides formats tend to be irritating to gastrointestinal tissues with potassium chloride and ferrous sulfate being well-known examples.

The world renowned authority on glucosamine metabolism and activity and author of "The Arthritis Cure", Dr. Jason Theodosakis has stated that the rumor that glucosamine sulfate is the only format that beneficially affects human cartilage is incorrect.

"Glucosamine hydrochloride may actually be more effective gram for gram since there's more pure glucosamine per unit weight in the hydrochloride form. Besides, most of the glucosamine sold as sulfate is probably glucosamine hydrochloride anyway (with an added sulfate, such as the salt, potassium sulfate). Studies with both the sulfate and hydrochloride forms have been positive."

Additionally, there are a substantial number of European glucosamine sulfate manufacturers that have switched to the manufacturing of glucosamine

hydrochloride. Biochemical knowledge, recent research and sound business principles have prompted these companies to invest heavily in changing over from glucosamine sulfate to glucosamine hydrochloride manufacturing processes.

Glucosamine is not a pain reliever or anti-inflammatory agent as is commonly used in the medically based, drug oriented approach to treating arthritis. It reduces pain by actually healing the affected joint and increasing the amount of protective synovial fluid manufactured. In other words, it helps the body to do more efficiently, what it is trying to do daily with the result of exerting a beneficial effect on the entire disease process. Glucosamine has been shown to thicken cartilage by up to 37%. With the regular use of glucosamine, joint cartilage becomes saturated with water which is its normal condition and as a result is more able to cushion forces placed upon the joints on a daily basis. In this way, the condition of the joint is gradually improved, eventually dramatically reducing pain and inflammation in all affected joints.

Unlike non-steroidal anti-inflammatory drugs, glucosamine has no side effects. However, the improvements in pain relief are a slower to appear as it takes time for joint integrity to be rebuilt.



There is some evidence that very long, continued use of glucosamine supplements may eventually lead to the actual reconstruction of new cartilage, but that would come as a secondary effect.³⁷

Glucosamine should be considered one of the treatments of choice for osteoarthritis.

History

Glucosamine sulfate is an amino sugar, which is part of the carbohydrate family, but instead of being used for energy, it is incorporated into body structures. It is found in high concentration in the joints and joint tissues. As well, it is involved in the formation of nails, tendons, skin,

eye tissue, bones, ligaments and heart valves. The highest percentage found in the body is in the joint tissue. Both the hydrochloride and sulfate forms of glucosamine are well absorbed, but most research has been done using the sulfate form.

Glucosamine (GS) is processed from chitin, the primary component of the exoskeleton of crabs, shrimp and lobster. Therefore, those with any allergy to seafood should talk to their doctor before using this ingredient.

Glucosamine has been studied for over thirty years for its potential role in osteoarthritis prevention and treatment, although it has only been available to the public for less than 10 years.

Glucosamine addresses the underlying cause of this condition, and supports the body's efforts to repair and heal the affected areas. Glucosamine supplies the body with the building blocks, glycosaminoglycans (GAGS) needed to create the collagen and special proteins needed to produce cartilage for the repair of joints throughout the body.

The longer you use glucosamine sulfate, the better the results will be. The end result is reduced pain and inflammation as the repair progresses and new cartilage is formed in the arthritic

joint. The new cartilage takes the place of the old and acts as the shock absorber of the joint, decreasing joint wear and tear, increasing naturally occurring anti-inflammatory substances and promoting lubrication and hydration levels in the joint. The end result is dramatically reduced joint irritation, inflammation and pain and increased joint mobility and strength.

Non-steroidal anti-inflammatory drugs (NSAIDS), the most commonly used pharmaceutical approach for this condition reduces pain as well, but can also increase bone loss, cause liver toxicity, and eventually increase cartilage loss, which contributes to the original problem.

Scientific research & validation

As stated prior, there are numerous studies indicating the overall effectiveness of glucosamine sulfate (GS) in reducing symptoms of osteoarthritis.⁷⁻²¹

One double blind study (252 patients with osteoarthritis of the knee) treated with oral administration of GS over four weeks reported a 55% improvement as compared to 38% in the placebo group.¹⁰

A randomized, placebo controlled study involving 80 patients reported

that there was a two times greater reduction of symptoms, two times as quickly in the GS treated group.⁷

Another six-month, double blind study of glucosamine, chondroitin and manganese reported significant reduction in symptoms.²²

Another unblinded study of 120 arthritic patients showed steady decline of pain while resting, exercising and standing.¹⁹

Drug / Glucosamine comparisons

These are some of the results from studies comparing glucosamine vs. anti-inflammatories and non-steroidal anti-inflammatory drugs (NSAIDs).

One animal study found that anti-inflammatory activity of indomethacin and piroxicam (NSAIDs) double when used with GS.²³

A 90-day, double blind study (339 patients) found piroxicam and GS proved equally effective.²⁴

The effects of GS were retained at near maximum levels up to the end of the post-treatment monitoring period, whereas the benefits of piroxicam rapidly wore off once treatment ceased.

Two studies with a total 80 patients compared GS to Ibuprofen. In both

studies, the ibuprofen gave faster pain relief. However, **GS was as effective as ibuprofen within two weeks,¹⁶ after eight weeks GS was more effective than ibuprofen.¹⁷**

One animal study suggests **GS in combination with chondroitin may be more effective than the most commonly employed NSAIDs used for arthritis treatment.⁵**

GS acts as both raw material and as a stimulant of chondrocyte activity (special cells that build cartilage) and also manufactures collagen and hyaluronan, (a natural anti-inflammatory) with the **end result of reduced inflammation and increased cartilage formation.¹⁻⁶**

Drug interactions

One study found patients on diuretics might need higher doses of GS for better results.²⁶

It is speculated that type I diabetics may require closer monitoring of blood sugar levels as GS may contribute to insulin resistance with long-term use. Animal studies indicate a possibility of risk of increased insulin resistance in diabetics with long-term use of GS.²⁷⁻³⁵

No human studies have been done to confirm this however.

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Vitamin D

We have known for a long time that vitamin D is crucial to increasing bone growth and strength. It also plays a major role in mineral metabolism and calcium absorption. Deficiency of Vitamin D is related to higher rates of breast, ovary, colon, and prostate cancer; increased incidence of multiple sclerosis, progression of osteoarthritis, impairment of the immune response, high blood pressure, mood disorders including serious depression, Type I diabetes and tuberculosis. Lack of Vitamin D appears to be a prime factor in the rising incidence of depression along with a lack of omega 3 fatty acids. Patients with Parkinson's disease, multiple sclerosis, congestive heart failure, and Alzheimer's disease all have significant deficits of Vitamin D.

However recent research has also discovered that lack of vitamin D can also dramatically increase muscle and joint pain associated with rheumatoid arthritis and multiple sclerosis and may indeed be a sign of deficiency. Deficiency of vitamin D may also be a major cause of unexplained muscle and bone pain. Research has University of Minnesota Medical School involved 150 kids and adults with unexplained muscle and bone pain. 94% of these

individuals were found to be vitamin D deficient and of these 55% were severely deficient with five patients having no vitamin D in their system at all. One of the many signs and symptoms of deficiency include mild to moderate joint and muscle pain. There was a much higher incidence of joint and muscle pain in those who have vitamin D deficiency regardless of age. The findings are reported in the December issue of the journal *Mayo Clinic Proceedings*.⁹

It has been suggested that all patients with persistent musculoskeletal pain or muscular pain or low back pain be screened for vitamin D deficiency. Several studies have shown that patients with these specific conditions respond to extremely well when they took vitamin D supplementation. Studies also show that knee and hip osteoarthritis patients with a low level of active vitamin D have the most symptoms and with supplementation of vitamin D the inflammatory reaction associated with arthritis was reduced.

Vitamin D deficiency is one of the most common deficiencies found in the general population. It has been speculated that as much as one in seven adults may be deficient.¹ In one study, 42% of hospitalized patients under the age of 65 were found to be

vitamin D deficient,² despite the fact that they were at that time receiving currently recommended amount through diet. This of course means that either they are not absorbing the amounts ingested or the recommended amounts are too low in order to maintain proper levels for health. Lack of vitamin D is a prevalent problem found among the elderly, which may be due to reduced absorption or transport or activation of vitamin D in the liver.³

It has been theorized that increased vitamin D deficiency in the general population could be due to a lack of or fear of sun exposure due to perceived increased skin cancer risk. Sun exposure increases vitamin D synthesis dramatically. It is estimated that one hours exposure to the sun could increase vitamin D synthesis by over hundred thousand international units. In a few studies, it has been noted that as little as 100 IU of vitamin D may prevent rickets. It has also been noted that an area of skin of just 20 cm square exposed to the sun for three hours daily will prevent rickets. Considering the recommended daily allowance for vitamin D is 200 IU per day for adults, it is no wonder there is a deficiency of this vital vitamin. Research suggests that housebound people or individuals who avoid the sun should have no less than 600 international units per day and

ideally should have 1,000 IU per day of vitamin D with the elderly receiving a minimum of 800 to 1,000 IU per day to help preserve bone density and prevent fractures.⁴⁻⁸

Toxicity

While it is true that vitamin D has potential for overdose, researchers are now presenting evidence that it is actually required and safe at dosages of 4,000 - 5,000 IU per day for adults. Dosage of 100,000 IU daily for several months in adults and 40,000 IU daily in infants for 1-4 months are likely to be toxicity inducing.

The symptoms of vitamin D toxicity include loss of appetite, nausea or vomiting, feeling nervous or weak, itching, excessive thirst, increased urination, and elevated blood calcium levels.



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Hydrolyzed Gelatin (Collagen)

Hydrolyzed gelatin (HCP) is the richest dietary source of the primary amino acids that make up the collagen molecule – glycine, proline, hydroxyproline, lysine and hydroxylysine. As a concentrated source of these collagen amino acids, hydrolyzed gelatin (HCP) is thought to help nourish the collagen-containing tissues throughout the body – tissues such as cartilage, bones, tendons, ligaments and skin. For this reason, it should be included in any formula for overall joint health.

HCP has been used in Europe for decades as a dietary supplement and an alternative treatment for arthritis and osteoporosis. In several German and Czech studies, seven to ten grams of HCP per day for 30-90 days has been shown to decrease the pain and stiffness associated with arthritis. In some studies, gelatin (HCP) was as effective as oral painkillers such as acetaminophen and in others, subjects were able to decrease or discontinue their use of analgesic medications while consuming HCP.

Proponents of HCP consumption claim that they “rebuild” cartilage and this view is being substantiated by research studies from Europe and the U.S. There is a growing body of scientific data showing pain reduction and faster repair of damaged cartilage and bone fractures.

How the body may use amino acids

Glycine

This simple amino acid is needed for the synthesis of the hemoglobin molecule. As well, collagen and glutathione can be converted to creatine, which is utilized to make DNA and RNA. It can be helpful for healing wounds, treating manic psychological states and problems of muscle spasticity.

Glycine reduces gastric acidity, and in high doses, stimulates the release of human growth hormones.

It is extremely important in brain metabolism as it can energize brain function without hyperactivity.

Glycine has been used as a mild sweetener in foods and drugs.

Proline

Some food sources of proline include eggs, dairy products, some meats and wheat germ.

This amino acid is found in collagen and is essential in the formation and maintenance of bone, skin, and cartilage formation therefore is helpful in maintaining healthy joints and tendons and aids in tissue repair following injury and wound healing. It can be created in the body

from glutamine and ornithine.

Hydroxyproline

This important component of collagen helps construct the fibrous connective tissue and is a part of the skin, bones, and cartilage.

It is converted from proline by hydroxylation only after proline gets into the amino acid chains that form body proteins.

Collagen and reticular fibers contain the protein collagen. Collagen is a very tough material and these fibers impart great strength to structures in which they occur (meat is tough because of its collagen content). The tensile strength of collagen has been compared to that of steel. When collagen is hydrolyzed (water is added under a special process changing it to hydrolyzed collagen), collagen is then converted into soluble protein gelatin. Because there is not much connective tissue in the body, about one third of all mammalian protein is collagen. Cartilage and collagen absorb the pressure and tension of activity, and tendons and ligaments ensure flexibility. Collagen is the most commonly occurring protein in the human body. Researchers have found that when human subjects consumed gelatin, firmness of collagen increased. Subjects with osteoarthritis had better ease of movement and a reduction of inflammation.

Professor Dr. of Medicine, Freidhelm Beuker, director of the Department of Sports Medicine, Heinrich Heine University, Dusseldorf Germany, has conducted several studies investigating the effectiveness of gelatin use in arthritis treatment.

In the course of his scientific investigations interesting results were discovered and published in the German health journal *Reformhaus Kurier*.

Hydroxyproline, one of the amino acids found in gelatin, was easily absorbed and as a result of this, regenerative action in the joint cartilage was observed. It was absorbed so quickly, that hydroxyproline was detected in the bloodstream a mere three hours after taking the gelatin orally.



It was also observed that prostaglandins (hormones responsible for anti-inflammatory action and pain relief in the body) are produced at a greater level.

The studies by Professor Adam from Prague corroborated these results. Inflammatory responses were reduced dramatically in patients who used gelatin as compared to those who were treated with a placebo.

The body will obtain and absorb the substances from the gelatin that it needs for cartilage and connective tissue to be able to endure maximum strain and physical stressors associated with sports training. Quick results cannot be obtained though, as this process of rebuilding cartilage and joint function takes time.

One such research project reported dramatically reduced healing time in bone fractures.¹

At least one German study has shown a reduction in bone breakdown in osteoporotic women and athletes recovering from intense exercise training or sports injuries appear to be able to do so faster when consuming HCP.

Another study reported that the use of collagen (gelatin) prolonged the effectiveness of calcitonin thereby increasing the effectiveness of osteoporosis treat-

ment and increasing bone density of osteoporosis patients.² Hydrolyzed gelatin is of interest as a therapeutic agent for the treatment of osteoarthritis and osteoporosis. Its high level of safety makes it attractive as an agent for long-term use in these chronic disorders.

A second study from the United States reported dramatically increased uptake and rebuilding of cartilage and bone in the participants when they used a collagen or gelatin rich diet. This preferential uptake by cartilage suggests that hydrolyzed gelatin has a beneficial effect on cartilage metabolism.³

A German study reported that only hydrolyzed gelatin or collagen increased type 2 collagen in chondrocytes, the specialized cells responsible for production of cartilage.⁴

Given the important role for collagen in bone structure, the effect of gelatin on bone metabolism in osteoporotic persons has been evaluated as well.³

Another study reported a direct correlation between age, collagen levels and the overall toughness and resistance to fracture of bone. As we age, our bones become weaker if we do not have enough collagen in them. It seems that taking just calcium isn't enough to prevent osteoporosis as we age.⁵

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Methyl Sulfonyl Methane (MSM)

History

MSM originates in the ocean and reaches the human food chain through rainfall. It is the prime source of bio-available sulfur, which is lost from our food by processing, drying, cooking and preserving. MSM is an important nutrient (not a drug or medicine) and is a component of over 150 compounds. It is needed by the body for healthy connective tissues and joint function, proper enzyme activity and hormone balance, along with the proper function of the immune system. MSM is a sulfur-containing compound chemically similar to dimethyl sulfoxide (DMSO). MSM may be better suited to human use as it has none of the effects of DMSO use, such as bad breath and body odor due to the sulfur content. Sulfur is the fourth most common mineral in our body. Our bodies use it to help protein maintain its structure; therefore we require plenty of it. MSM provides the sulfur to create sulfur peptide bond linkages, which literally holds amino acids together like glue.

Because bio-nutritional sulfur plays such a major role in these healthy body functions and others, it was found that supplementation with MSM improves many health problems such as allergies, asthma, emphysema, lung dysfunction,

arthritis, headaches, skin problems, stomach and digestive tract problems, circulation, cell osmosis and absorption. Combinations of amino acids create various proteins used to construct new structures such as cells, organs and joint and muscle tissue. Another important aspect of MSM is its ability to inhibit damaging enzymatic activity in the joint tissue and the rebuilding of joint tissue. Without the required amount of sulfur, we would not be able to keep up with the demand for new cellular growth. This is especially important as we grow older, or if we have any chronic inflammatory condition such as arthritis.

MSM acts as an analgesic and anti-inflammatory. It also inhibits muscle spasm and increases blood flow.

MSM occurs naturally in such foods as milk, meat, seafood, vegetables, fruit and chocolate. However, processing, heating, storage, and preparation of foods destroys essential MSM sulfur. Without sufficient MSM sulfur in the body, unnecessary illness of varying types may result. Research has shown that MSM is helpful in improving joint flexibility, reducing stiffness and swelling, improving circulation and cell vitality, reducing pain and scar tissue, and in breaking up calcium deposits. MSM is also believed to make cells more permeable, enabling the body to flush out undesirable foreign particles.

Scientific research & validation

While the research on MSM is preliminary, there are a number of studies reporting positive results in several conditions. MSM is responsible for the flexible bond between cells, including those that make up the skin. It acts to block undesirable chemical and physical cross-linking or bonding of collagen that is associated with tough, aging skin.

Approximately half of the total body sulfur is concentrated in the body's muscles, skin, and bones. It is present in keratin, the tough substance in the skin, nails and hair.

Sulfur is necessary for making collagen, the primary constituent of cartilage and connective tissue, but it is also responsible for the conformation of body proteins through the formation of disulfide bonds, which hold connective tissue together. MSM does this in conjunction with vitamins and amino acids, and the process is going on 24 hours of every day. MSM is also necessary for the catalytic functions of many enzymes, as they work with glutathione to regenerate vitamin C.

As a dietary supplement, MSM is recommended for neutralizing and eliminating toxins as well as alleviating conditions of environmental and food allergies, pain from inflammatory disorders, gastrointestinal ailments and infection.

Osteoarthritis

One small, unpublished, double blind study reported MSM might be helpful in treatment of osteoarthritis.²

An unpublished human trial involving 16 people with evidence of osteoarthritis, reported an 82% improvement in pain reduction over six weeks.⁹

In a double-blind study of MSM's impact on degenerative arthritis, it was reported that patients who ingested 2,250 mg of MSM a day for six weeks experienced reduction in pain by 82 percent, on average.

A mouse study reported positive results in reducing joint damage related to rheumatoid arthritis.³

Bladder infection

Anecdotal reports and case studies indicate that MSM may be helpful in cases of interstitial cystitis (urinary bladder infection).⁴

Comprehensive trials are needed to properly evaluate MSM's value for this condition.

Snoring

A small (35 individuals) preliminary trial reported positive results in reduction of snoring while using MSM. 28 of the 35 participants responded favorably, with reduced noise and improved sleep.⁵

Cancer prevention

While the numbers of tumors were not reduced, two preliminary animal studies reported MSM delayed the onset of tumor development after exposure to cancer causing chemicals.^{6,7}

Another mouse study using mice with a genetic autoimmune condition pre-disposing them to develop tumors, reported MSM had a protective effect overall. As well, the life spans of the treated mice almost doubled.⁸

Toxicity

No reports have been noted even at doses 250 times the normal therapeutic level.⁸

Anecdotal reports suggest that there may be allergic reaction in less than 20% of the population when using large doses (greater than 2000 mg/daily). Symptoms could include rash, headache and diarrhea. Despite these suggested effects, MSM has been used at this dosage for years with no reports of adverse symptoms.¹⁰

Drug Interactions: none known.

Contraindications

None known, but safety of use during pregnancy, lactation and by children has not been ascertained.

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Bromelain

Bromelain is a mixture of protein-digesting enzymes found in pineapples (*Ananas comosus*). Bromelain supplements contain active substances that aid digestion and help reduce inflammation. Bromelain has been used for a variety of clinical applications for more than 35 years. Although all of its mechanisms of action have not been completely discovered, bromelain has demonstrated a beneficial effect on the kinin system, the coagulation cascade, the cytokine system, and prostaglandin synthesis. Bromelain is believed to enhance the absorption of flavonoids and has been shown to increase absorption of glucosamine, so bromelain supplementation should be considered when these nutrients are given in arthritis treatment.

There are a number of clinical trials showing the benefit of using oral proteolytic enzymes as a digestive aid. Proteolytic enzymes are also theorized to help reduce symptoms of food allergies and as a treatment for rheumatoid arthritis and other autoimmune diseases (which are thought by some alternative medicine practitioners to be caused by whole proteins from foods leaking into the blood and causing an immune reaction – sometimes called “leaky gut”).

Perhaps the strongest evidence for

benefits of proteolytic enzyme supplements come from numerous European studies showing various enzyme blends to be effective in accelerating recovery from exercise and injury in sportsmen as well as tissue repair in patients following surgery. In one study of soccer players suffering from ankle injuries, proteolytic enzyme supplements accelerated healing and got players back on the field about 50% faster than athletes assigned to receive a placebo tablet.

A handful of other small trials in athletes have shown enzymes can help reduce inflammation, speed healing of bruises and other tissue injuries (including fractures and cuts) and reduce overall recovery time when compared to athletes taking a placebo. In patients recovering from facial and various reconstructive surgeries, treatment with proteolytic enzymes significantly reduced swelling, bruising and stiffness compared to placebo groups.

Surgical procedures & musculoskeletal injuries

Bromelain has therapeutic effects in the treatment of inflammation and soft tissue injuries. An early clinical trial on bromelain was conducted on 74 boxers with bruises on the face and bruising of the eyes, lips, ears, chest and arms.

Bromelain was given four times a day for four days or until all signs of bruising had disappeared. A control group of 72 boxers were given a placebo. In 58 of the boxers taking bromelain, all signs of bruising cleared completely in four days, with the remaining 16 requiring eight to ten days for complete clearance. In the control group, only ten had complete clearance within four days, with the remainder requiring seven to fourteen days for resolution.¹

The edema-reducing property of bromelain was investigated in an animal study. After oral application of bromelain, a significant reduction of the edema could be observed, however, injection of bromelain resulted in a minimal therapeutic effect. Although orally-applied enzymes are thought to be degraded in the gut, the better results were obtained after oral administration of bromelain, supporting the observation that bromelain can be absorbed by the gut without losing its biological properties.²

Fifty-five pre-surgical patients were divided into two groups. Group one, consisting of 22 patients, took bromelain four times a day for 48-72 hours prior to surgery and continued for 72 hours after surgery. Group two, consisting of 33 patients, took bromelain starting on the day of surgery, with the first dose administered one hour prior to surgery.

Fifty percent of group one and 42.4% of group two had complete disappearance of pain and inflammation within 72 hours. Pain and inflammation persisted past 72 hours in only one member of the group supplemented with bromelain for three days prior to surgery, as opposed to five members of the group that started supplementation one hour prior to surgery.

In a separate study, supplementation of bromelain starting 48-72 hours prior to surgery reduced the average number of days for complete disappearance of pain from 3.5 to 1.5, and disappearance of inflammation from 6.9 to 2.0 days, as compared with controls receiving no bromelain.³

Sixteen patients undergoing oral surgery were given bromelain four times a day starting 72 hours prior to surgery. At 24 hours after surgery, 75% of these patients were evaluated as having mild or no inflammation, in contrast to only 19% of a group receiving a placebo. 24 hours after surgery, pain was either absent or mild in 38% of bromelain-treated patients, as opposed to 13% receiving placebo. After 72 hours, this increased to 75% of those in the bromelain group, as compared to only 38% in the placebo group.⁴

In a 1995 German study, 59 people

with strains and torn ligaments were given bromelain for one to three weeks; researchers found that the supplement caused a significant reduction in swelling, tenderness, and pain, both at rest and during movement. The results were comparable to those of people taking NSAIDs such as aspirin. Bromelain also has an anti-inflammatory effect on the muscles and can help excess fluid drain from the site of a muscle injury.⁵

Of particular interest, was the finding that there was no significant difference between the treatment groups. This means that the enzyme blend was just as effective as the drug in relieving the pain/stiffness of arthritis. Similar findings have been reported for other painful inflammatory conditions including carpal tunnel syndrome, fibromyalgia, facial bruising, ankle sprains, muscle soreness and others.

Arthritis & other inflammatory conditions

Bromelain supplements may be as effective as some commonly used non-steroidal anti-inflammatory (NSAID) medications (such as ibuprofen and diclofenac) for reducing pain associated with osteoarthritis. Similarly, preliminary studies suggest that bromelain may also help reduce the pain associated with

rheumatoid arthritis. Plus, long-standing use of bromelain suggests that this enzyme may be helpful as part of the treatment for other connective tissue disorders including scleroderma (build up of tough scar-like tissue in the skin and, at times, internal organs), bursitis, and tendinitis.

In one double-blind study, the pain relieving effects of an enzyme blend was compared to a common analgesic drug in 80 patients suffering from osteoarthritis of the knee.

The study lasted two months with a 28-day treatment period followed by a treatment-free period of another 28 days. In measurements (at rest, on motion, on walking, and at night) it was seen there was a significant improvement after treatment in both the treated and placebo groups, with both groups reporting a tendency to relapse during the treatment-free period.

Surgical procedures & sports injuries

Although studies show mixed results, bromelain supplements may reduce swelling, bruising, healing time, and pain following surgery and physical injuries. In fact an authoritative body in Germany called the Commission E (similar to the

U.S. Food and Drug Administration and the Canadian Health Protection Branch approved the use of bromelain for these purposes.

One study of 700 patients (mostly firemen with injuries) reported that the group taking the bromelain had good or excellent results, healing in half the time as the non-bromelain group.

Other trials with oral bromelain over a thirteen month period showed a good response in over 70% of the patients.

Wounds & burns

Some animal studies indicate that bromelain (applied to the surface of the skin) may be useful in removing dead tissue from third-degree burns (particularly burns that damage all layers of the skin). This application has not yet been tested on people, but traditional and current day practices in Japan, Hawaii and Taiwan include use of topical bromelain to clean wounds and burns. Similarly, some clinicians may recommend this topical agent to reduce swelling from insect bites or stings.

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Turmeric

Latin names

Curcuma aromatica Salisbury, *Curcuma domestica* Valetton and *Curcuma longa*.

Common names

Jiang huang, curcuma, common turmeric, guisador, azafran, palillo, ukon, goeratji, kakoenji, koenjet, kondin, kunir, kunyit, oendre, rame, renet, temu kuning, temu kunyit, tius, tumeric, turmeric.

History

The rhizome is frequently used as spice, however it has been used traditionally in folk medicine for hepatitis. It is a classic medication used in Indian Ayurvedic medicine for thousands of years as a treatment for coughs, poor vision, rheumatic pain and to increase milk production.

Scientific research & validation

Modern research has shown that use of turmeric for arthritic conditions is effective for a number of reasons. It reduces free radical damage and increases the production of naturally produced anti-inflammatory substances in the body.

There are two models of inflammation that have been studied to date.

Chronic models where the inflammation develops over a period of time (several days), which is common in arthritis and acute models, where acute effects of anti-inflammatory agents can be studied.

Pharmacological actions of curcumin as an anti-inflammatory agent have been examined by Srimal and Dhawan.¹⁰ In this research study, the authors reported that the turmeric compound was effective in acute as well as chronic models of inflammation. The potency of this mixture is approximately equal to phenylbutazone in the carrageenin-induced edema test, but it is only half as active in the chronic experiments.

It was observed that curcumin was less toxic than the reference drug (no mortality up to a dose of 2 grams per kilo of body weight).¹¹

Another study also found that there was a better effect when ibuprofen and turmeric were used together to treat chronic pain.¹²

An animal trial reported that turmeric was effective in reducing the symptoms of arthritis in 61 dogs as measured by clinical assessment by the owners and investigators.⁸

Another animal study proved that certain proteins found in inflamed joints are reduced by turmeric.⁹

Curcumin is an effective anti-inflammatory. It reduces histamine levels and may increase production of natural cortisone by the adrenal glands that act as an anti-inflammatory.³

Curcumin protects tissues against oxidative damage and degeneration that in turn reduces inflammation in joint tissue.¹³

It protects against free radical damage and the inflammation caused by it due to its strong antioxidant properties.^{1,2}

A preliminary trial in people with rheumatoid arthritis found curcumin to be useful for reducing inflammation and symptoms such as pain and stiffness.⁶

A separate double-blind trial found that curcumin was superior to placebo or phenylbutazone (NSAID) for alleviating post-surgical inflammation.⁷

Anti-inflammatory activity

There are a number of papers relating the activity of compounds extracted from *C. longa* L. being potent inhibitors of inflammation. These substances can be classified as curcuminoids, analogues of diarylheptanoids.

The root contains at least three anti-inflammatory compounds:

- ◆ Curcumin
- ◆ Feruloyl-4-hydroxy-cinnamoyl methane
- ◆ Bis-14-hydroxy-cinnamoyl methane

They are dose dependent and can be used at doses up to 30 mg. per kilo of body weight.¹⁴

Antioxidant

The most active principle of turmeric is curcumin, one of the most potent antioxidants available. This active constituent protects against free radical damage through its strong antioxidant action.¹

Human beings have been exposed to radiation for many years. Radiation exposure increases every year from many sources such as microwaves produced from computers, cell phones and kitchen appliances and, as a result, free radicals are also on the increase.

It is quite possible that antioxidant phytochemicals contained in foods provide a variable degree of radioprotection. One of these foods is turmeric. Free radical scavenging and electron/hydrogen donation are probable attributes for the protective effect of curcumin. Several studies showed there was strong protec-

tion from curcumin for skin cells from cancer creating free radicals.¹⁷

The activities of naturally occurring antioxidants such as superoxide dismutase, catalase and glutathione peroxidase are higher (by 19%, 19% and 20%, respectively) in liver cells of rats fed the turmeric-containing diet in comparison with the controls. These studies indicate that dietary turmeric lowers lipid peroxidation by enhancing the activities of antioxidant enzymes. Turmeric protects the liver from free radicals and reduces arteriosclerosis by reducing the free radical damage done to cholesterol.¹⁸

Turmeric has blood-thinning properties and for that reason will increase blood circulation. This is of paramount importance to anyone with an arthritic condition as typically poor blood supply and acidity combine to create platelet aggregation (sticky blood), one of the issues found in most arthritis cases. Reduction of this chronic situation will improve kidney function and establish a better blood supply throughout the body.



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Devil's Claw

Harpagophytum Procumbens

Devil's claw is native to the arid regions of Southern and Eastern Africa. It is harvested at the end of the rainy season, and, traditionally, was used to treat indigestion, fevers, and blood disorders, as well as arthritis, rheumatism and gout. It was named due to the thorny, barbed claw arrangement of the seed pod.

Common names

Devil's claw is otherwise known as grapple plant (South Africa), pedaliaceae family, griffe du diable (French), trampelklette (Germany), and teufelskralle (Germany).

Common uses

Historical use and modern research suggests that Devil's claw is one of the best herbs to use for arthritis conditions. It has been used for hundreds of years for arthritis, tendonitis and acute low back pain. Modern research bears out its historical use.

Devil's Claw was the #1 product sold for arthritis before GLS appeared in health food store. It may have use as a digestive aid.

Constituents

It contains iridoids, such as harpagoside, harpagide, procumbide, phenolic glycosides such as acetoside, isoacetoside, raffinose, glucose, iron, manganese, phosphorus, silicon, unsaturated fatty acids, sodium, oligosaccharides and zinc.¹⁻⁵

It is unclear whether these iridoids or derivatives produced by digestion and hydrolysis (harpagogenin) are the active principles.

Scientific research & validation

Water and alcohol extracts of Devil's claw have been studied for effectiveness in osteoarthritic patients for analgesic and anti-inflammatory effects.

Several studies reported significant reduction in inflammation and pain associated with chronic osteoarthritis.⁶⁻¹¹

One study reported Devil's claw was as effective in pain reduction as the slow acting arthritis drug diacerhein.²⁰

In animal models, it has been reported that Devil's claw extract is equally or more effective than administration of indomethacin or phenylbutazone.⁹⁻¹¹

Devil's claw has anti-inflammatory and analgesic effects in sub-acute inflammation in animal models, and has apparent

protective effect in arrhythmia induction greater than lidocaine.^{12,13}

Devil's claw is listed in pharmacopoeias and traditional systems of healing as a treatment for tendonitis, various forms of arthritis, digestive ailments and disorders of the loco motor system.^{14,15}

Toxicity

Devil's claw appears to be quite safe however anyone with gastrointestinal ulcers should avoid use.¹⁶⁻¹⁹

Mild gastrointestinal upset may occur in some individuals at high dosage.¹⁵

Drug interactions

Given its anti-arrhythmia effects in animal models, it is speculated that there could be an interaction with cardiac medication.^{12,13,15}

Contraindications

Anyone with ulcers may need to avoid use of Devil's claw.¹⁶



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Boswellia (Boswellia Serrata)

Frankincense, or boswellia, is derived from the African and Middle Eastern trees belonging to the genus boswellia. The tree is small, growing to a height of only ten to twenty-three feet, and is related to the same tree that produces myrrh. It has been used since ancient times during religious rituals. Historically, it was used to help scar tissue form rapidly, and in the treatment of skin cancer. It has also been used for centuries for its 'believed' therapeutic qualities. It was used for skin disorders, hemorrhages, and pneumonia.

Common Names

Frankincense is also otherwise known as olibanum, boswellia carterii, hsun lu hsiang, kondor, luban, and tien tse hsiang.

Common Uses

It has been used since ancient times for numerous complaints. It was believed to help in the treatment of:

- ◆ Stress and anxiety when combined with meditation or yoga exercises, and deep inhalation.
- ◆ Helps to stimulate the circulation of blood.

- ◆ To treat tuberculosis and chest pains.
- ◆ Reputed to be effective for treating colds, sores, abscesses, bruises, cancer, carbuncles, injuries, cancer menstrual pain, sinus congestion, aches and pains.

No wonder it was one of the gifts that the three Magi brought to honor Christ's birth.

Scientific Research and Validation

Modern research has reported effectiveness of boswellia extracts in the treatment of rheumatoid arthritis,¹ polyarthritis² and osteoarthritis.³

One double blind human, crossover study involving 30 individuals with osteoarthritis of the knee compared boswellia against a placebo. One-half of the participants received either boswellia or placebo for eight weeks at which time any changes in symptoms were observed and recorded. This time the participants switched treatments for another eight weeks with the results once again being recorded at the end of the treatment plan. The results showed significantly greater improvement in knee pain, knee mobility, and walking distance with boswellia compared to placebo.⁵

Other studies have shown anti-inflammatory activity very similar to cox II inhibitors and other conventional non steroidal anti-inflammatory drugs (NSAID) that mitigate pain and inflammation through the control and reduction of leukotriene production.^{1, 6}

A 6 week study reported reduced severity and number of asthma episodes, which is also an inflammatory issue related to arthritis, while using boswellia.⁴

Constituents

Essential oils, boswellic acid, alkenes, glucoarabinogalactins, alkenes, esters, maleates, ketonic alcohol (olibanol), resins, and terpenes (including camphene, dipentene, alpha and beta pinene, and phellandrene).

Toxicity

None reported.

Drug Interactions

None reported.

Contraindications

Should not be used during pregnancy or lactation or by women suffering from excessive menstrual bleeding.

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How to maintain joint health

There's plenty of evidence suggesting that exercise may be one of the most important factors in maintaining joint health. Weight-bearing exercise is extremely important to maintain bone density. The old adage of "If you don't use it, you lose it," is true when it comes to joint health as well.

The more we use the joints that were giving us trouble the less trouble they will give us as we age. Once again prevention is preferable but most people do nothing about their health until they are forced to. What this really means is that part of the maintenance of healthy joints has to do with what actions we take every day to keep healthy. Even if you use the best arthritis formula, much of the effect will be lost if basic healthy routines and diet are ignored. Remember that the beginning of the downward spiral of arthritis begins with dehydration and poor diet.



Hydration Tactics

In order to ensure that your system gets enough water to function effectively and to maintain the fluid levels needed to keep your joints hydrated, a simple strategy can be used.

Drink half your weight in ounces. For example, if your weight is 150 pounds, drink 75 ounces of filtered water per day.

Never drink with a meal or up to 1 hour after eating. Drinking on a full stomach dilutes digestive enzymes needed for proper digestion. This bad habit in time will eventually lead to a more acidic body, the first step to arthritis.

If you must drink alcohol, coffee or pop, drink an extra 16 ounces of water for every alcoholic drink and cup of coffee or pop you consume. This is in addition to the water you would normally drink.

This sounds like a lot to change, but as time goes on even those individuals who never get thirsty will establish their sense of thirst. Remember that dehydration is already occurring if you wait until you are thirsty to drink. Those who are never thirsty are chronically dehydrated.

Dietary Approaches

One of the most damaging lifestyle behaviors that contribute to arthritic predisposition is diet. A crucially significant aspect of diet is the acid/alkaline balance of foods. The more acidic the diet, the more likely the occurrence of arthritis will surface. One thing to remember is that all cooked foods are acid forming. Concentrate on eating the majority of vegetables and fruits raw.

A balanced diet contains 30% acid and 70% alkaline forming foods.

Acid/Alkaline (pH) are the two characteristic conditions of blood and cell solution. Any solution is either more acid or more alkaline. If acidic characteristics dominate, the solution is acid. However

there is no absolute acid or alkaline. An acid solution always contains some alkaline factors, and an alkaline solution always contains some acid factors. Neutrality is an ideal condition in which the activity levels of acid and alkalinity are equal. It is an ideal state, and not found in real life. In reality, what we eat or drink is always either more acid or alkaline.

Two types of acid and alkaline foods.

One type is the acid or alkaline level of the foods themselves, which means how much actual acid or alkaline substances the foods contain.

The other is acid or alkaline forming food, which means the acid or alkaline forming ability of food to affect the pH of the body after being digested. This is the one that will be the focus in changing the body's pH.

Foods to avoid or reduce during a treatment program

Most acid forming foods

Alcohol, artichoke root, barley, bread, buckwheat, caffeine, coffee, custards, drugs, most flours, ginger preserved, honey, lentils, maté, millet, oatmeal, peanuts, rice, rye grain, soy bread, soy noodles, sorghum, spaghetti and other pasta, sugar cane, walnut (English), wheat.

Acid forming foods

Dried beans, cashews, coconut, cranberry juice and concentrate, egg yolk, filberts, fruit jellies (canned jams, sulfured, sugared, dried), grapes, pasteurized milk products, dry peas, pecans, Damson plums, tofu fries and water-chestnuts.

Acid forming fats

Butter, cream, margarine and lard.

Night-shade vegetables traditionally have been avoided in arthritic treatment plans. They include peppers, (red, green and yellow), potatoes, tomatoes and eggplants.

Neutral oils

These oils should be cold pressed or expeller pressed only; almond, avocado, coconut, canola, cottonseed, linseed, olive, safflower, sesame, soy, sunflower and walnut.

Foods for an anti-arthritic diet

Most alkaline forming foods

String beans, banana, dandelion greens, dates, figs, prunes, raisins and Swiss chard.

High alkaline forming foods

Almonds, avocado, fresh beans, blackberries, carrot, cranberries, chives, endive, sour grapes, kale, dried peach, persimmon, plum, pomegranate, raspberries and spinach.

Alkaline forming foods

Agar, alfalfa, apple & fresh apple cider, fresh apricot, globe artichokes, bamboo shoots, snap beans, sprouted beans, most berries, blueberries, broccoli, Brussel sprouts, cabbage, cantaloupe, cauliflower, celery, cherries, chestnuts, chicory, coconut milk, collards, corn (fresh and sweet), cucumbers, daikon, eggplant, escarole, garlic, ginger root, gooseberry,

grapefruit, guava, horse-radish (fresh and raw), kelp, kohlrabi, leek, lemon, lettuce, lime, loganberry, mango, melons, raw milk, acidophilus yogurt and whey.

Now that you have repaired the damage and the joints feel normal, strong and pain free, it only makes sense to continue to use diet, exercise and water to maintain joint health but also use the formula that helped you to recover in the first place. A maintenance dose will provide the desirable substances you need to keep those joints flexible and pain free far into the future. After all the work and time you have spent on regenerating your joints why would you want to risk a relapse and have to repeat it all because you have reverted back to your old habits. Remember this is a life style change, not a short-term fix. It is easy to continue once you experience the results.



One of the most damaging lifestyle behaviors that contribute to arthritic predisposition is diet.

Nutri-Flex Testimonials

Mr. Joe H., a 73 year old, world famous wood carver, writes that his hand and back pain was so severe that he would soon not be able to work at the craft that he loved and worse yet, he would be wheelchair bound. Despite using a variety of drug therapies, his condition was steadily worsening. This is what he has to say.



To whom it may concern,

I have taken numerous types of pharmaceutical medication for my arthritis, as well as every known herbal remedy for relief of pain. To my dismay I did not receive any relief whatsoever. The pain in my hands was so severe that in desperation I once tried squeezing them in a vice.

The doctors told me that I would be in a wheelchair in less than a year, but my biggest worry was the loss of my hands. I am a renowned woodcarver and my talents have reached as far as Africa, USA, England and British Columbia.

Since taking *Nutri-Flex*, I have experienced full pain relief in my hands and approximately 60% to 70% relief of back pain. I can now walk without a cane. Seeing the results, my wife also tried it for relief of pain in her hands, feet and back and immediately she felt 90% to 100% better. It's unbelievable!

So on behalf of my wife and myself we'd like to take this opportunity to express our appreciation for the return of our health. God bless you!

Sincerely,
Mr. Joe H., Mrs. Helen H. - T. Lake, ON

"All my pain disappeared."

"I have suffered with Osteoarthritis for the past six or seven years and the back and leg pain never seemed to let up. Then one day a friend suggested I try Nutri-Flex. I must admit I had considerable doubt when I purchased my first bottle of Nutri-Flex but I was willing to try anything to ease the pain. Would you believe, ALL my pain disappeared after the very first day of using Nutri-Flex. I woke up the next morning and was free of pain."



George W. - Edmonton, AB



"I regained most of my mobility and feel much better. This product is near miraculous and I'm so relieved."

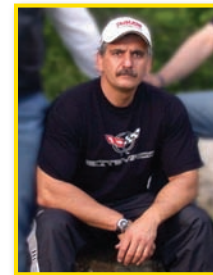
"I have scoliosis and I'm in pain 24/7. Recently my muscles seized up and I was in excruciating and debilitating pain. An MD prescribed medication but after two days - I sensed my digestive system was being damaged, so I went off them.

I went to my neighbourhood health store and asked for his strongest Anti-inflammatory and he recommended Nutri-Flex liquid. I was dubious about it, but took it out of desperation. I stopped my medication and have been taking Nuti-Flex for three days now...

within the first day the back and muscle pain had GREATLY reduced! I regained most of my mobility and feel much better. This product is near miraculous and I'm so relieved.

The ingredients are a great combination and it really works. Whatever Naka has done with the combination/amounts and the fact it's liquid = perfection! Thank you so much!"

Rachel D. - Toronto, ON



"First of all I would like to say I am in no way involved with Naka nor will I benefit from this letter. I'm just one of those lucky to find Nutri-Flex users."

Here is my story:

I am currently 45 year of age, when I was younger I worked out 5 days a week 2.5 hours a day for years. I was proud of my muscle mass and strength but there was a price to pay. My elbows would burn and ache, they would wake me up in the middle of night just throbbing. Finally after seeing the doctor, trying copper and magnetic bracelets. etc. I had to quit working out.

A few years ago I decide to get back to the gym, all was well for a while then the throbbing began. Sad that I would have to give it up again, a friend recommended Nutri-Flex. What did I have to lose? It took about a month to finally stop all the pain, but now I can workout and sleep at night. I can't thank Naka enough. Thanks.

Len. S. - Hamilton, ON

The Complete Joint Care Formula

Nutri-Flex from Naka

For years, people all over have come to trust Naka's Nutri-Flex family of products for effective joint and arthritis pain relief. It's available in two great liquid formulas, an easy to swallow capsule format plus as a topical rub-on cream.

Nutri-Flex is the complete joint care formula. Just one tablespoon a day of original liquid Nutri-Flex with Glucosamine Sulfate helps you maintain moisture in the cartilage to lubricate joints and slow degeneration. Strengthen and rebuild joint cartilage with amino acid rich Hydrolyzed Gelatin. Ease your pain and discomfort with natural pain reliever Methyl Sulfonyl Methane (MSM) and anti-inflammatory ingredients Bromelain, Turmeric and Devil's Claw.

Liquid Nutri-Flex is also available in an exciting new formula featuring the additional health benefits of Vitamin D (1000 IU) plus Boswellia. Studies suggest that Vitamin D can help to prevent major breast, colon and ovarian diseases.



**Nutri-Flex is the
official joint care
supplement of the
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The Nutri-Flex™

Family of Joint Care Products:



- Helps to relieve the pain associated with osteoarthritis and aching joints.
- A factor in building of healthy cartilage.
- Effective alternative to prescription drugs.
- Fast-acting liquid formula for greater, faster absorption so key ingredients can go to work.



Naka Herbs & Vitamins is a leading worldwide supplier of herbal and vitamin supplements. Whatever your lifestyle, Naka supplements can help you to achieve your wellness goals and live healthier.



ABOUT THE AUTHOR

Martin Stone, Bsc. and Clinical Herbalist, has been involved in the Complementary / Alternative Health Field for almost 25 years in many different capacities, including Teacher, Clinical Practitioner and Author. Beginning with a background in biology and spinal health care, he has successfully treated thousands of individuals in his more than two decades of practice.

Martin taught Iridology and Herbalism at one of Canada's premier education centers, Wild Rose College of Natural Healing and maintained a busy practice there for thirteen years. He has also done numerous television and

radio interviews and had his own radio show, "The Health Minute" heard throughout Alberta and the Northern United States. Martin also participated in the creation of a position paper on the future of health care in Alberta for the Premier's Commission.

In the past decade he has written two alternative health databases and 13 books on various health topics such as diabetes and arthritis in addition to his first book, "Herbs Explained", www.herbs-explained.com which contains all the information you need pertaining to the research and science of commonly used herbs in North America, all in every day language.

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