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# Natural Medicine

## Approaches for the Treatment of Degenerative Arthritis

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**A**rthritis literally means "inflammation of the joint." If the diagnosis and treatment of this disorder was easy, the 40 million Americans who are currently suffering from the most prevalent form of arthritis, osteoarthritis, would not be suffering the consequences of joint degeneration.

Although arthritis can take on many forms, including gouty, septic, psoriatic, and rheumatoid, the ultimate degeneration that occurs in all forms involves cartilage loss. Therefore, this review of the literature focuses on osteoarthritis and general approaches that can be taken to nourish and support healthy cartilage and its formation.

It is estimated that 80 percent of people over the age of fifty suffer from some degree of osteoarthritis. Degenerative arthritis affects more men prior to age 45, and more women thereafter. Generally speaking, weight-bearing joints, such as the hips, spine, knees, and hands, are most commonly involved. These joints are especially prone to degeneration as a result of greater wear and tear they experience than other tissues throughout the body experience.

Osteoarthritis results from either the normal stress of years of use or from factor that put increased strain on joints. Such predisposing factors include prior trauma (such as fractures and soft-tissue damage), joint and structural abnormalities (inherited musculoskeletal anomalies such as flat feet, etc.), cartilage damage,

and other forms of arthritis that accelerate joint destruction.

Arthritis symptoms can vary greatly relative to pain and degree of joint destruction. Sometimes, a little destruction can cause a lot of pain in one individual as compared to some people who have severe joint destruction with minor discomfort.

### Signs, Symptoms, and Causes

The signs and symptoms of arthritis often include various degrees of morning stiffness, loss of joint function, and worsened pain after use. These symptoms are progressive and treatment intervention, when offered early, can often slow or virtually abort much of the destruction associated with osteoarthritis. Other symptoms that are frequently experienced include tissue swelling, grinding of joints, restricted joint mobility, and swelling around the joints.

There are numerous predisposing risk factors that increase the likelihood of either getting or speeding the degeneration that most Americans will have to face at some point during their lives. These include prolonged and excessive use of nonsteroidal anti-inflammatory drugs (NSAIDs) that prevent the healing and that speed joint destruction, hypothyroidism, excess body weight, prior fractures, and other factors.<sup>1-5</sup> (See box entitled Degenerative Arthritis Conditions and Factors.)

### Dietary Considerations

Certain foods have been demonstrated to affect joint health positively. The addition of the following foods have been pro-

posed to help to modulate the symptoms of osteoarthritis by helping to maintain optimal hormonal balance: Soy; apples; whole grains; fennel; celery; parsley; and other fruits and vegetables.<sup>6</sup>

On the other hand there is clinical evidence suggesting that the elimination of foods that belong to the genus Solanaceae (nightshade family) can provide dramatic relief in some people. Foods to be avoided include tomatoes, potatoes, peppers, eggplant, and tobacco. It is currently believed that the alkaloids in these foods inhibit the healing process and the maintenance of collagen and can promote degenerative processes.<sup>7</sup>

Other dietary factors that I have observed to worsen symptoms include, high iron intake, prolonged consumption of caffeinated beverages (leading to calcium loss), and a high meat diet, which can increase inflammatory processes.

### Nutritional Supplement Considerations

*Glucosamine and Chondroitin Sulfate as Joint Nutrients*

Glucosamine is made of glucose and an amine, whereas the larger molecule of chondroitin is made of repeating units of glucosamine with attached sugars. Chondroitin sulfate's molecular size averages 50-200 times larger than that of glucosamine, thus absorption is 9-13 percent for chondroitin compared to 90-98 percent for glucosamine.<sup>8,9</sup>

The common dose for glucosamine sulfate is 500 mg three times per day, with higher doses given to individuals who are

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20 percent or more above ideal body weight. The mechanism of action for glucosamine sulfate appears to be that it promotes glycosaminoglycan production. As one ages, the inability of the body to produce sufficient glucosamine to maintain optimally healthy joints is currently believed to be a major contributing factor in progressive degenerative joint destruction. Therapeutically, glucosamine sulfate begins to have noticeable effects within 4 weeks. There have been numerous double-blind studies supporting the theory that glucosamine sulfate works consistently and actually outperforms NSAIDs in terms of pain relief after the 4 week mark.<sup>10,11</sup>

In fact, glucosamine sulfate produces better long-term effects than NSAIDs in alleviating pain and joint mobility. It is remarkable that glucosamine accomplishes this not through an analgesic effect, of which it produces only a little, rather it does this by addressing the underlying pathology.<sup>12,13</sup> In an open clinical trial involving 1506 people who received 1500 mg per day for an average of 50 days, 95 percent of the participants reported noticeable benefit.<sup>14</sup>

For chondroitin sulfate, the research is, at best, weak regarding the level of benefit that can be conferred with its use. It is thought at the present time that therapeutic benefit from the use of chondroitin sulfate is derived from the absorption of either the sulfur or smaller glycosaminoglycan components that result from digestive breakdown.<sup>8</sup> Studies comparing glucosamine and chondroitin vs placebo or drug therapy

### Therapeutic Dose Considerations

Boron	3–6 mg per day
Boswellia	400 mg 3 times per day
Copper	1–3 mg per day
Devil's claw (dried root)	1000–3000 mg per day (in divided doses)
Ginger	500–4000 mg per day (in divided doses)
Glucosamine sulfate	1500 mg per day (in 3 divided doses)
Pantothenic acid	12.5–2,000 mg per day (in divided doses)
S-adenosylmethionine	400 mg 3 times per day
Vitamin B <sub>6</sub>	50–100 mg per day
Vitamin C	1000–4,000 mg per day (in divided doses)
Vitamin E	600–800 international units per day
Yucca	1000–4000 mg per day
Zinc	30–45 mg per day (in divided doses)

confirm that chondroitin is substantially less useful.<sup>15,16</sup>

#### *S-adenosyl-methionine*

It has been noted that a deficiency of S-adenosyl-methionine (SAME) results in the inability to maintain cartilage properly. In a double-blind study of 14 patients with osteoarthritis of the hands, therapeutic use of SAME increased cartilage formation as documented by magnetic resonance imaging.<sup>17</sup> Double-blind studies have demonstrated that the effectiveness of SAME resembled that of NSAIDs in reducing pain scores. (See "News You Can Use," page 119)<sup>18,19</sup>

#### *Niacinamide*

Degenerative arthritis responds to high doses of niacinamide. In a double-blind study of 72 people suffering from

osteoarthritis, of subjects who were given 500 mg 6 times per day for a total of 3000 mg per day, 29 percent reported improvement, compared to the subjects in the placebo group who reported a 10 percent worsening of symptoms. The patients who responded to niacinamide treatment were able to decrease their NSAID use and still maintain previous pain-free levels.<sup>20</sup> It should be noted that prolonged usage of 3000–4000 mg per day warrants close monitoring to ensure that liver damage and glucose intolerance does not occur.

#### *Vitamin C*

Vitamin C deficiency leads to diminished cartilage repair and synthesis. In addition, the vitamin's antioxidant properties help to protect and enhance existing cartilage.<sup>21,22</sup> A study that

## Zingiber was shown to help up to 75 percent of patients in a study in which patients took 500–1 000 mg 1–4 times per day.

### Degenerative Arthritis Conditions and Factors

The following conditions and factors increase the chance of contracting degenerative joint disease and worsen long-term prognosis:

- Hypothyroidism
- Excess body weight
- Diet high in foods from the nightshade family (a possible factor)
- Disturbed prostaglandin pathways
- Previous or current joint disease
- Hypermobility
- Structural anomalies
- Prior damage to joints
- Fractures
- Dietary deficiencies
- Aging
- Prolonged and extensive use of nonsteroidal anti-inflammatory drugs.

tracked the benefits of vitamin C in guinea pigs with osteoarthritis showed that less cartilage loss occurred in the animals who were kept on high doses of vitamin C. Of additional interest regarding this study is that guinea pigs are among a handful of animals who do not produce vitamin C naturally, a physiologic attribute that is similar to humans.

#### Pantothenic Acid

Positive clinical results with pantothenic acid have been strong for the treatment of osteoarthritis, with as little as 12.5 mg providing symptom relief and with results appearing within 7–14 days.<sup>23</sup> Yet, in studies specifically

involving rheumatoid arthritis, pantothenic acid has not shown meaningful results on a sustained basis.<sup>24</sup>

#### Vitamin E

The antioxidant properties of vitamin E, at doses of 600 international units or greater, appear to help in stabilizing joint membranes.<sup>25</sup> Tocopherol appears to inhibit the breakdown of cartilage and stimulate new cartilage generation.<sup>21</sup>

#### Selenium

Selenium deficiency may be present in patients who are suffering from osteoarthritis. Thus, supplementation may aid in normal cartilage maintenance.<sup>26</sup>

#### Other Nutrients

Other nutrients that can prove to be helpful clinically include boron, cartilage extracts, essential fatty acids, *Perna canaliculus*, sea cucumber, sulfur, superoxide dismutase, vitamin B<sub>6</sub>, and zinc.

### Herbal Treatment Consideration

A few of the herbs that can prove to be helpful in the treatment and prevention of degenerative arthritis include boswellia, Devil's Claw, and yucca.

Boswellic acid extracts have been shown to possess antiarthritic effects. The proposed mechanisms of action include supporting proper cartilage synthesis, anti-inflammatory properties, and producing an enhanced blood supply to joint tissue.<sup>27,28</sup>

Devil's Claw has been reported to have anti-inflammatory properties that are equal to phenylbutazone.<sup>29</sup> However, other stud-

ies suggest that Devil's Claw actually has little ability to decrease inflammation.<sup>30</sup>

Double-blind studies have demonstrated that the saponins in yucca have the ability to help in alleviating arthritic symptoms.<sup>31</sup>

Zingiber, more commonly known as ginger, was shown to help up to 75 percent of patients in a study in which patients took 500–1,000 mg 1–4 times per day. The patients who took the larger doses reported more rapid and significant results.<sup>32</sup>

Numerous other herbs have proven themselves to be helpful clinically, including capsicum, bromelain, feverfew, and tumeric.

### Summary

Degenerative joint destruction will probably affect most of our patients, during the course of their lives. However, it does not have to limit an active lifestyle; in fact, when the first signs of symptoms appear and are addressed early, optimal joint health can be regained and maintained. Often, musculoskeletal symptoms that appear after years of wear and tear, or after an injury sustained at some point in a patient's life, reflect a generalized need—that the body is missing critical nutrients that are needed to sustain a higher level of overall well-being and health.

Too often, symptoms are ignored, because of the misconception of "no pain-no gain," or that people can just work through the pain. Indeed, in the short run, pain can be overcome; yet, the damage that arises from not heeding the warning

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signals can cause long-term and possibly permanent cartilage destruction. When it comes to maintaining quality of life, there is no more simple way to ensure an active lifestyle for the years to come than to provide the musculoskeletal system with the nutrients it needs on a daily basis. □

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