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Capsaicin Cream Eases Pain, Cartilage Damage in the Treatment of Osteoarthritis

A cream containing small amounts of capsaicin, derived from hot peppers, can do more than reduce symptoms of osteoarthritis—it can actually block the degeneration of synovial tissue in joints. Those are among the findings described in a recent supplement to the journal *Seminars in Arthritis and Rheumatism*.

Nonsteroidal anti-inflammatory drugs (NSAIDs, such as aspirin and acetaminophen) are routinely recommended to reduce pain in osteoarthritis, a condition in which the cartilage that cushions joints breaks down. However, NSAIDs pose a variety of side effects.

Researchers now believe that a substance called decapeptide substance P, which is elevated in the blood and synovial fluid of people with osteoarthritis, promotes the breakdown of cartilage and functions as a neurotransmitter of pain. Capsaicin contains a substance, trans-8-methyl-N-vanillyl-6-nonenamide, that inhibits the activity of decapeptide substance P.

Numerous studies have reported that capsaicin cream reduces pain when used in conjunction with NSAIDs. Roy Altman, MD, of the University of Miami School of Medicine, explored whether a cream containing 0.025 percent capsaicin would *by itself* reduce arthritis pain.

Under Altman's guidance, 96 patients applied a capsaicin or placebo cream to their arthritic joints—most often the knees—four times daily. Patient responses were measured by objective measurements of movement and associated pain, as well as by subjective assessments of whether they felt better or worse.

Patients using the capsaicin cream benefited from a reduction in pain by the study's eighth week. At the end of the 12-week study, 81 percent of the patients using the capsaicin cream improved, whereas only 54 percent of those using a placebo cream were helped.

"Capsaicin treatment resulted in an 11-minute reduction in morning stiffness at week 12 compared with a 7-minute reduction for vehicle (placebo) treatment," Altman wrote in *Seminars in Arthritis and Rheumatism* (June 1994;23, Suppl 3:25-33).

The only side effect from the capsaicin cream was a modest burning and stinging sensation where it was applied. Although almost half of the patients complained about the burning sensation at the start of the study, only three felt it was still a problem after 12 weeks.

In another study, Thomas Schnitzer, MD, PhD, of Chicago's Rush-Presbyterian-St. Luke's Medical Center, found that applying the capsaicin cream twice a day was almost as effective as four times a day. Applying the

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Fish Consumption Protects Against Stroke

Eating one fish meal per week may reduce a person's risk of thrombotic stroke, according to a long-term epidemiological study by Dutch researchers.

The National Institute of Public Health and Environmental Protection, The Netherlands, has followed the dietary habits and diseases of 552 men in the town of Zutphen for 35 years.

Sirving Keli, MD, a researcher at the institute, looked specifically at their fish consumption and risk of stroke from 1970 to 1985. Of the 552 men, 42 eventually suffered a stroke.

"Fish consumption in 1970 was significantly lower among the future stroke cases....The 220 men who consumed more than 20 grams of fish per day in 1970 had a significantly lower risk of stroke compared with those who ate less fish," Keli wrote in *Stroke* (Feb. 1994;25:328-332). The association between fish and lower risk of stroke remained unchanged even after the researchers factored in other dietary factors and lifestyle habits, including

smoking.

Keli noted that other studies have shown that the omega-3 fatty acids found in fish, including eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), reduce the formation of thromboxane A₂, a substance that promotes clotting.

"The results of the present study suggest that an inverse relation exists between fish oil consumption and incidence of stroke," wrote Keli. "The possible protective effect of low to moderate fish consumption in both stroke and coronary heart disease is intriguing...With respect to prevention of cardiovascular disease, evidence is accumulating that the consumption of at least one portion of fish per week may have a protective effect."

However, the anti-clotting benefits of fish oils may have a down side. Keli noted that Greenland Eskimos, who eat large amounts of fish and fish oils, suffer a high incidence of hemorrhagic stroke, possibly the consequence of an increased bleeding time. □

Lowering Fat Consumption, Increasing Intake of Soy Prevents Invasive Prostate Cancer

An article in *Nutrition and Cancer* (1994;22:1-10) reviewed the medical literature on nutrition and prostate cancer and proposed several dietary changes to lower one's risk of developing the disease.

"There are...sufficient data now at hand to recommend nutrition as an adjunct to other therapies for cancer of the prostate," wrote Ernst Wynder, PhD, of the American Health Foundation's epidemiology division in New York City.

Wynder noted that noninvasive prostate cancer occurs at about the same rate worldwide and is strongly associated with increasing age. In contrast, the invasive—and more deadly—form of prostate cancer tends to be influenced by diet.

For example, Japanese and Chinese men who consume small amounts of fat in their native countries have a relatively low incidence of invasive prostatic cancer. Men of Japanese and Chinese ancestry in the United States consume far more fat and are much more likely to develop invasive prostatic cancer.

Similarly, Black Africans who consume a low-fat diet have a low incidence of invasive prostate cancer. But African-Americans, who consume large amounts of fat, have the world's highest incidence of invasive prostate cancer.

What might be an optimal intake of fat?

"The nature of such an optimal diet in terms of fat and its influence on certain cancers has not been fully delineated, but it appears that a 40% fat diet represents significant metabolic 'overload,' whereas even a 30% fat diet may still be excessive," suggested Wynder. "Indeed, the evidence from ecological data suggests that a 15-20% fat calorie diet may be required to achieve a beneficial impact on the risk of fatal prostate cancer."

In laboratory experiments, linoleic acid tended to stimulate the growth of prostate cancer cells, as it did breast cancer cells, Wynder stated. Conversely, the omega-3 fatty acids suppressed the growth of prostate cancer cells in cell cultures and in mice.

Wynder believes the high Japanese consumption of soy products could be protective against prostate cancer. Soy products contain genistein, a flavonoid that inhibits cancer cell growth.

He cited one study in which soy protein suppressed prostatic inflammation in rats. (Inflammation is associated with cancer risk.) Eighty percent of the rats on a soy-free diet developed inflammation, whereas only

16 percent on a soy-free grain-based diet developed the condition. None of the rats receiving soy developed prostatic inflammation.

"However," Wynder added, "it should be borne in mind that soy products not only contain isoflavonoids, such as genistein, but also a host of other potential anticancer compounds, including protease inhibitors, phytoesters, saponins and inositol phosphates."

To better assess the benefits of dietary changes, Wynder recommended a study in which subjects are given a diet consisting of 15 percent fat, plus supplements of selenium, vitamin E and a soy product. □

Antioxidant Supplements May Reduce Risk of Preeclampsia

Researchers have suspected that preeclampsia, a toxemia of pregnancy characterized by high blood pressure and headaches, is caused by excessive free radicals. A recent study has found that women with preeclampsia have low blood levels of antioxidant nutrients.

Magdy Mikhail, MD, of the Albert Einstein College of Medicine, New York City, analyzed blood samples from 30 women with preeclampsia and compared them with samples from 44 women who had uncomplicated pregnancies.

Blood levels of vitamin C were "significantly decreased" among patients with mild and severe preeclampsia. Vitamin E and beta-carotene levels were significantly reduced in women with severe preeclampsia.

"In patients with preeclampsia, antioxidant nutrients may be utilized to a greater extent to counter free radical-mediated cell disturbances, resulting in a reduction in antioxidant plasma levels," Mikhail wrote in the *American Journal of Obstetrics and Gynecology* (July

1994;171:150-7). "Water-soluble antioxidant nutrients may initially be consumed, followed by lipid-soluble antioxidants." □

High-Dose B12 Helps MS Patients

There's still more evidence that vitamin B12 can help people with multiple sclerosis (MS).

Researchers at Kyushu University in Japan measured blood levels of vitamin B12 and vitamin B12 binding capacities in 24 MS patients, 73 patients with other neurological disorders, and 21 healthy subjects. Vitamin B12 levels were roughly the same, but the MS patients had a "significant decrease" in B12 binding capacities, perhaps limiting utilization of the vitamin.

Six of the most seriously ill MS patients were given 60 mg (not mcg!) injections daily for six months. While their motor disabilities did not improve, their visual problems did.

"We therefore consider that a mas-

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Carnitine Improves Heart Function

A natural derivative of the amino acid carnitine, L-propionylcarnitine (LPC), improves heart function, according to a study conducted at the Sticares Cardiovascular Research Foundation in Rotterdam, The Netherlands.

L-carnitine is involved in energy production in the heart. However, heart cells cannot produce carnitine, so they are dependent on an external supply of the nutrient.

Willem Remme, MD, PhD, studied 21 male patients ranging in age

from 46 to 73 years. They suffered from angina pectoris and exercise-induced ischemia (poor blood flow to the heart), but had normal blood pressure. All but one of the patients had had a documented heart attack.

The subjects underwent pacing stress tests 45 minutes before and 15 minutes after receiving either a placebo or 15 mg of LPC per kilogram of body weight (about 1,000 mg for a 150-pound adult). Arterial carnitine levels increased by about 15 times among those taking the supplement.

"Although LPC did not affect myocardial oxygen demand and supply, it diminished myocardial ischemia...Furthermore, LPC improve recovery of myocardial function after pacing...Thus, LPC prevents ischemia-induced ventricular dysfunction," Remme wrote in the *American Journal of Cardiology* (July 15, 1994;74:125-30).

"Because it is well tolerated, it may be a valuable alternative or addition to available anti-ischemic therapy," he added. □

Elderly Need More Vitamin C and Beta-Carotene

Elderly men have lower blood levels of vitamin C and beta-carotene compared to younger men, even though their dietary intake of the two nutrients is roughly the same, according to a study of 2,000 German men ages 18-88.

The difference in vitamin C levels was exacerbated among elderly men who smoked, indicating that "elderly men may need more vitamin C in their diet to achieve comparable plasma levels of young adults," researchers wrote in the *European Jour-*

nal of Clinical Nutrition (Heseker, H., Feb. 1994;48:11-27).

Beta-carotene levels were "reduced substantially" among smokers and to some extent among heavy drinkers. "At the same carotene intake levels," the researchers reported, "elderly smokers seem to have reduced plasma beta-carotene levels

as compared with young adults."

Vitamin E levels, however, did not appear to be associated with age.

"This study supports the hypothesis that with age the requirement for vitamin C and possibly for beta-carotene increases and that the requirement for vitamin E is not altered by age," the researchers concluded. □

Dietary Sugar Risk Factor in Biliary Cancer

Most patients diagnosed with biliary cancer do not live for more than a year. Hence, researchers have focused on dietary and lifestyle risk factors that can be modified. For example, gallstones and obesity are two of the established risk factors for biliary tract cancer.

Now, a team of Dutch researchers has pointed to high dietary sugar consumption, including monosaccharides (such as glucose) and disaccharides (such as sucrose), as a risk factor in biliary cancer.

Clara Moerman, PhD, an epidemiologist with the National Institute of Public Health, Bilthoven, The Netherlands, compared the diets of 111 people with biliary cancer to 480 healthy subjects.

"The most consistent finding of the present study was an elevated risk of biliary tract cancer associated with the intake of sugars independent

of other sources of energy," Moerman wrote in the *International Journal of Epidemiology* (April 1993;22:207-14). □

Choline and MS

A study in the *Annals of Neurology* (de Bie, S.H., Aug. 1994;36:157-65) reported "significantly reduced" levels of choline in the neurons of people with multiple sclerosis. Choline levels were lowest in the "white matter" of the neurons. White matter, consisting most of sheathed nerve fibers, surrounds the spinal cord. □

MS, Vitamin B12...

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sive dose of methyl vitamin B12 therapy may be useful as an adjunct to immunosuppressive treatment for chronic progressive MS, wrote Jun-Ichi Kira, MD, in *Internal Medicine* (Feb. 1994;33:820-6). □

Vitamin C Protects Against Some of Alcohol's Effects

It's well-known that alcohol is toxic to cells. A recent study, however, found that vitamin C can protect against some of alcohol's toxicity.

In an experiment, seven healthy volunteers were asked to drink 84 grams of ethanol over a 45-minute period. Tests indicated that the alcohol was cytotoxic.

Cytotoxicity was prevented when the volunteers received 1 gram of vitamin C daily for three days before drinking the alcohol, the researchers wrote in *Biochemical Pharmacology* (Wickramasinghe, S.N., Aug. 3, 1994;48: 621-4). □

Capsaicin Cream and Arthritis...

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cream less frequently, suggested Schnitzer, might improve patient compliance with the program.

The study, which included 48 patients with osteoarthritis of the hands, began with some of them being asked to apply the capsaicin cream four times a day for several weeks, then only in the morning and evening for several more weeks. Other patients were given a placebo cream and asked to apply it the same way.

Twenty-six percent of the patients benefited from applying the capsaicin cream 4x/day, compared with only 6 percent of those taking a placebo. When the patients shifted from 4x/day to the 2x/day applications, about half (13 percent) of those who had benefited noted an increase in pain. But nearly all of the patients who benefited (22 percent) reported that pain was reduced after several weeks of applying the cream only 2x/day.

"Topical capsaicin relieves the pain associated with neuralgias, rheumatoid arthritis, and osteoarthritis, and is usually administered on a QID (4x/day) basis," Schnitzer wrote in *Seminars in Arthritis and Rheumatism* (June

1994;23, Suppl 3:34-40). "However, from the perspective of patient compliance, a QID regimen may not be optimal for long-term therapy."

He added that the 2x/day "maintenance regimen will likely enhance long-term patient compliance and also result in cost savings to the patient."

Chad Deal, MD, of the Case Western Reserve University School of Medicine, Cleveland, provided a clinician's (rather than a researcher's) perspective on the use of capsaicin cream.

"Topically applied capsaicin cream is an ideal analgesic therapy for patients with localized arthritis pain, offering proven efficacy with no systemic side effects," he wrote in *Seminars in Arthritis and Rheumatism* (June 1994;23, Suppl 3:48-52).

Deal pointed out that two strengths of capsaicin cream are available on the market, 0.025 percent and 0.075 percent. He suggested that patients try the higher strength cream if they don't benefit from the lower strength one.

"Patients should be instructed to apply a small amount of capsaicin cream to the skin covering the affected joint; for a knee joint, a pea-sized dab

should be sufficient. The cream should be dotted around the joint and gently massaged into the skin until no residue remains. The cream should be applied three to four times every day to obtain maximal benefit," he wrote.

"Relief occasionally occurs within a few days," Deal added, "but it may take a week or two to achieve full effect.... I am convinced that topical capsaicin has a significant role in the treatment of arthritis pain, and I encourage physicians to consider it an early therapeutic option for localized arthritis pain." □

Medicinal Herbs

If you'd like to rely more on medical journal references and less on folklore when using medicinal herbs, pick up a copy of *Botanical Influences on Illness*, written by Melvyn Werbach, MD, and Michael Murray, ND. Organized by disease—more than 60 of them—*Botanical Influences* summarizes hundreds of medical journal articles describing the use of herbs. It's also fully referenced, so you know where in the medical journals the information originally appeared. The book sells for \$39.95, plus postage. To order a copy, call Third Line Press at 1-800-916-0076. In California, call (818) 996-0076. □

Capsaicin Cream Also of Value in Psoriasis

A cream containing 0.025 percent capsaicin also reduces symptoms of psoriasis and the itching associated with the condition, researchers have reported.

Almost 200 patients were given either the capsaicin cream or an identical looking cream without the pepper extract. They rubbed on the cream four times daily for six weeks.

According to an article by the researchers in the *Journal of the American Academy of Dermatology* (Ellis, C.N. et al., Sept. 1993;29:438-42), "topically applied capsaicin effectively treats pruritic psoriasis...."

Capsaicin-treated patients benefited from a "significantly greater improvement" in itching than did those

using a plain cream. In addition, the capsaicin-treated patients had a reduction in severity in their psoriasis, including less scaling, thickness, and redness.

The researchers wrote that capsaicin inhibits decapeptide substance P, which has been implicated in the pathophysiology of psoriasis and pruritis, as well as in arthritis. (See related story on page 1.) □

Vitamin C, Antibiotics

Vitamin C enhances the effect of some antibiotics and reduces antibiotic resistance to such drugs, according to a report in *igaku Kenkyu Acta Medica* (Nakanishi, T., Sept. 1993;63:95-100)

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