

Inflammation & Systemic Stress -Treatment with Magnesium Chloride

Source: Mark Sircus Ac., OMD

Obesity without inflammation
does not result in insulin resistance.
Dr. Jerold Olefsky

Inflammation plays a key role in a set of disorders that include type II diabetes, obesity, and heart disease—collectively called the metabolic syndrome. Dr. Steve Shoelson, a professor of medicine at Harvard Medical School has focused squarely on inflammation. Epidemiologists have found that patients with type 2 diabetes and cardiovascular disease have slightly elevated levels of inflammatory markers in their bloodstream, raising the possibility that inflammation might be associated with the development of these diseases, and proinflammatory cytokines such as TNF- α and IL-6 promote insulin resistance in experimental models.

Inflammation itself has been well studied by immunologists: after an infection, a host of different types of immune cells are deployed to the infection site to control the infection. But Dr. Shoelson says that the situation is different in patients with metabolic diseases: the same markers of an immune response are present, but they persist chronically at a low levels instead of following the dramatic rise and fall in an infection.

Inflammation has been shown to be linked to insulin resistance and to defective insulin signaling in nonobese diabetic (NOD) mice.

Several years ago, Shoelson's team was studying mechanisms underlying insulin resistance—the failure of the body to respond to its own insulin, a condition that raises blood sugar and can lead to diabetes. They found reports from more than a century ago that high doses of anti-inflammatory medications called salicylates lowered the blood sugar levels of patients with diabetes.

Medicine does not recognize how subtle, constant and easily triggered inflammatory processes can be. "Eating induces an inflammatory state in everyone. Normally, inflammation occurs for three or four hours after eating but will then taper off. Though people can't avoid eating, Dr. Dandona says they can avoid what and how much they eat. He says, "If people eat McDonald's-type meals every

three or four hours, and many do, they spend most of their time in a pro-inflammatory state."

"Inflammation in blood vessels is one of the main drivers of atherosclerosis, and diabetes makes it much worse," said Dr. Jun-ichi Abe of the University of Rochester Medical Center. Dr. Abe said that in people without diabetes, fast blood flow triggers anti-inflammatory enzymes, endothelial nitric oxide synthase and other factors, which block the ability of pro-inflammatory immune cells to home in on and adhere to diseased portions of blood vessels.

A study, also published in March of 2008, was done at New York University, has found that pregnant women with periodontal (gum) disease have an increased risk of developing gestational diabetes mellitus than pregnant women with healthy gums. Again we see inflammation in diabetes with the inflammation of the gums spreading to the rest of the body through the blood vessels.

Inflammation plays a pivotal role in all stages of atherosclerosis, which is the progressive narrowing and hardening of the arteries over time.

Inflammation is the activation of the immune system in response to infection, irritation, or injury. Characterized by an influx of white blood cells, redness, heat, swelling, pain, and dysfunction of the organs involved, inflammation has different names when it appears in different parts of the body. Most allergy and asthma sufferers are familiar with rhinitis (inflammation of the nose), sinusitis (inflammation of the sinuses), and asthma (inflammation of the airways), but inflammation is also behind arthritis (inflammation of the joints), dermatitis (inflammation of the skin), and so on.

The inflammatory response can be acute or chronic. Acute inflammation typically lasts only a few days. This response usually promotes healing but, if uncontrolled, may become harmful.

The primary objective of acute inflammation is to localize and eradicate the irritant and repair the surrounding tissue but this completely changes in chronic low-grade inflammatory states. Chronic low-grade inflammation is one of the characteristics of the metabolic syndrome and interferes with insulin physiology. Ignorance has prevailed over the interrelationship between muscular lipid accumulation, chronic inflammation and insulin resistance because the central mediating factor is magnesium. It is magnesium that modulates cellular events involved in inflammation.

There are many factors that trigger inflammation. They are found in both our internal and external environments and include excessive levels of the hormone insulin (insulin resistance), emotional stress,

environmental toxins (heavy metals), free-radical damage, viral, bacterial, fungal other pathogenic infections, obesity, over consumption of hydrogenated oils, periodontal disease, radiation exposure, smoking, spirochetes such as the Borrelia that causes Lyme disease, and certain pharmacological drugs. Problems with insulin metabolism are a major contributor to cardiovascular disease. It results in the inability to properly store magnesium, causing blood vessels to constrict, elevated blood pressure, and coronary arterial spasm, all of which can result in a heart attack.

Excess insulin causes retention of sodium, fluid retention, elevated blood pressure and congestive heart failure.

Dr. Ron Rosedale

Inflammatory reactions in the body are a valuable predictor of impending heart attack. Dr. Robert Genko, editor of the American Academy of Periodontal Journal, claims that persons with gingival disease (which is an inflammatory disorder) are 27 times more likely to suffer a heart attack than are persons with healthy gums. An American Heart Association paper disclosed that 85% of heart attack victims had gum disease compared to 29% of healthy similar patients.

When magnesium levels of fall researchers note a profound increase of inflammatory cytokines present, along with increased levels of histamine.

Magnesium deficiency causes and underpins chronic inflammatory build ups. This concept is intriguing because it suggests a fundamentally simpler way of warding off disease. Instead of different treatments for heart disease, Alzheimer's and colon cancer, we apply a single, inflammation-reducing remedy that would prevent or treat these and other deadly diseases. The key words here are 'prevent' or 'treat' but please notice the word is not cure. Though magnesium is a cure for many of our ailments full treatment protocols are recommended with magnesium chloride as the top protocol item. It is a protocol of basic items like magnesium, iodine, Alpha Lipoic Acid, sodium bicarbonate, sodium thiosulfate, whole food vitamin C, natural vitamin D from the sun, spirulina and some other important items like purified water that will make a difference in a host of chronic diseases.

Once we understand the critical importance of inflammation and glutathione depletion in brain diseases, we can take steps to prevent or even reverse the damage.

Dr. David Perlmutter

Inflammation and systemic stress are central attributes of many pathological conditions. In magnesium we have found a potent medicinal that is effective across a wide range of pathologies. Pharmaceutical companies need look no further than the sea shore, which contains millions of tons of magnesium chloride the perfect anti-inflammatory agent.

Is your heart on fire?
New York Times

It could very well be but we most likely will not know it until we suddenly have cardiac arrest. Researchers recognize a silent kind of inflammation. This type of internal inflammation has an insidious nature and is the culprit behind diabetes and heart disease. The chronic and continuous low-level stress that silent inflammation places on the body's defense systems often results in an immune-system breakdown. Magnesium deficiency is a parallel silent insult happening at the core of our physiology. Magnesium deficiencies feed the fires of inflammation and pain.

Epidemiologic studies have shown an inverse relationship between magnesium in the drinking water and cardiovascular mortality. This association between magnesium in drinking water and ischemic heart disease was reconfirmed in a major review of the literature done by epidemiologists at Johns Hopkins University. Since most heart disease is marked by various levels of inflammation these studies were all highlighting the hidden relationship between inflammation and magnesium deficiency.

Another reason that chronic inflammations can take us into the hell fires of pain is that magnesium gets depleted in conditions of inflammation.

Beyond all the common symptoms of inflammation we find the body tissues themselves may lose their ability to recognize cells that are "self " from those that are not, and the body may mistakenly identify its own cells as foreign invaders. This internal programming error then continues to trigger and retrigger immune responses, setting the stage for autoimmune diseases, such as lupus, multiple sclerosis, and scleroderma. The result is cellular chaos, and what is even more disturbing is that this process may be happening year after year without our even being aware of it.

This chronic inflammatory response breaks down healthy tissue in a misdirected attempt at repair and healing.

Doctors who specialize in rheumatoid arthritis, multiple sclerosis, lupus and other autoimmune disorders are very familiar with what happens when the body goes to war with itself. These diseases demonstrate a direct inflammatory attack against healthy cells in such places as the joints, nerves and connective tissue.

Magnesium is central to immunocompetence and plays a crucial role in natural and adaptive immunity.

Alzheimer's patients who were already taking anti-inflammatory drugs for arthritis or heart disease tend to develop the disorder later than those who weren't.

Atherosclerosis is caused by chronic inflammation, which often begins very early in life. The big dispute among experts is what causes the inflammation in the first place. One theory holds that bacteria and viruses may cause this inflammation but clearly we know that lead, mercury, monosodium glutamate (MSG) and fluoride and other toxic chemicals can also cause inflammatory reactions in blood vessels.

Recent advances in the field of cardiovascular medicine have emphasized the involvement of inflammation in the formation of atherosclerotic plaque.

This chapter represents basic research into the nature of inflammation. It looks beyond the pharmaceutical companies; beyond aspirin and other multipurpose experimental drugs that block inflammation, but not without collateral damages. Magnesium is at the heart of the inflammatory process, it is the prime first cause when it is not present in sufficient quantities. Increases in extracellular magnesium concentration cause a decrease in the inflammatory response while reduction in the extracellular magnesium results in inflammation. Inflammation causes endothelial dysfunction and activated endothelium facilitates adhesion and migration of cancer cells.

Chronically inflamed tissues continue to generate signals that attract leukocytes from the bloodstream. When leukocytes migrate from the bloodstream into the tissue they amplify the inflammatory response.

Magnesium literally puts the chill on inflammation especially when used transdermally. Heart disease begins with inflammatory chemicals that rage like a fever through your blood vessels. Cool the heat by getting the recommended daily minimum of magnesium suggests Medical University of South Carolina researchers. They measured blood inflammation levels--using the C-reactive protein (CRP) test--in 3,800

men and women and found that those who got less than 50% of the RDA (310 to 420 mg) for magnesium were almost three times as likely to have dangerously high CRP levels as those who consumed enough. Being over age 40 and overweight and consuming less than 50% of the RDA more than doubled the risk of blood vessel-damaging inflammation.

The magnesium intake of a total of 11,686 female health professionals who were younger than 45 years old and had not had heart and blood vessel disease, a stroke, or cancer was studied in 2005 by Dr. Y. Song and colleagues.⁸ Prior to this only a few studies have been done to see whether magnesium intake is related to inflammation in the body. The researchers wanted to know if women who have more magnesium in their diet or take magnesium supplements had a lower risk of inflammation and the metabolic syndrome.

Women who got more magnesium in their diet were less likely to have the metabolic syndrome, inflammation in the body, and heart and blood vessel disease. Inflammation in the body was less common in women who got more magnesium. Women who had the highest magnesium intake had 12% lower C-reactive protein levels than women with the lowest magnesium intake. This study shows that the magnesium found in a healthy, well-balanced diet can protect the body against inflammation and high blood glucose, conditions that can lead to type 2 diabetes and heart and blood vessel disease.

Chronic inflammation destabilizes cholesterol deposits in the coronary arteries, leading to heart attacks and strokes.

A study performed by the VA Administration, published in JADA, 1998 on 10,000 US veterans, showed that most coronary heart disease started as an endothelial infection and in most cases was caused by pathogens. Recognizing the role of inflammation in arteriosclerosis represents a huge paradigm shift for cardiologists. The American College of Cardiology, the American College of Physician's and the American Heart Association largely ignores the involvement of inflammation in heart attacks and strokes and certainly they ignore unresolved psycho-emotional trauma, as well as the toxic build up of mercury which can lead to massive heart failure and sudden death even in the healthiest athlete.

Inflammation not only further damages the artery walls, leaving them stiffer and more prone to plaque buildup, but it also makes any plaque that's already there more fragile and more likely to burst.

A 2006 issue of the Journal of the American College of Nutrition an article showing that as consumption of magnesium fell, the levels of C-reactive protein went up. C-reactive protein, or CRP, is produced

in the liver and has emerged as a strong predictor of clinical events of cardiovascular diseases, such as heart attacks and stroke, even in cases where cholesterol levels may be normal. For this reason, CRP assays may become a routine part of blood tests for determining CVD risk. CRP levels in the blood are normally undetectable or very low; high levels are strongly associated with inflammation.

Inflammation is the missing link to explain the role of magnesium in many pathological conditions.

Persistent asthma is an inflammatory disease that requires regular anti-inflammatory therapy with magnesium chloride.

This new view of inflammation is changing the way some doctors' practice but most cardiologists are still not ready to recommend that the general population be screened for inflammation levels. Cardiologists don't know it but when in rare instances they test for serum magnesium levels they are not measuring anything but strictly controlled magnesium levels in the blood. There continues to be a blind spot the size of the Gulf of Mexico in cardiologists' perceptions. They just are not able to get to the bottom of the inflammation story – which is magnesium deficiency.

Magnesium decreases swelling, and, "is effective in the treatment of inflammatory skin diseases.

Scientists at the Joslin Diabetes Center in Boston, have bred a strain of mice whose fat cells are supercharged inflammation factories. "We can reproduce the whole syndrome (diabetes) just by inciting inflammation," Dr. Steve Shoelson says. This suggests that a well-timed intervention in the inflammatory process might reverse some if not all the effects of diabetes. Some of the drugs that are already used to treat the disorder, like metformin, may work because they also dampen the inflammation response. In addition, preliminary research suggests that high CRP levels may indicate a greater risk of diabetes.

Whatever makes us become less efficient at using insulin is going to aid in the development of diabetes. Treatments for diabetes work by replacing insulin, boosting its production or helping the body make more efficient use of the hormone.

Modern medicine is just starting to admit that chronic inflammation is the main contributing factor to heart disease and it is just about to discover magnesium chloride as a supremely safe and effective anti inflammatory. Magnesium chloride safely reduces inflammation and systemic stress because magnesium deficiencies are in great part the cause of both conditions.

People with magnesium deficiency can't properly metabolize important fatty acids such as EPA and DHA, which are vital to heart health.

There are literally hundreds of physiological reasons to proclaim magnesium the ultimate heart medicine; its involvement in hundreds of enzyme reactions is just a start. Its use as an anti inflammatory makes magnesium absolutely indispensable to not only heart patients but also to diabetics, neurological and cancer patients as well. The treatment of chronic inflammation has been problematic for medical science because most of their treatments create more inflammation. Magnesium chloride does not do this, especially when applied transdermally. Transdermal magnesium therapy is the ultimate medical treatment for inflammation and pain.

Magnesium Oil can be applied directly to inflamed areas.

Transdermal Magnesium Therapy offers an important breakthrough in medical treatment offering an excellent a form of magnesium supplementation that is just not possible with oral use alone. Transdermal medicine is ideal for pain management as well as sports and pediatric medicine and for diabetic neuropathy there is nothing better in the entire world of medicine.

Traditional methods of administering medicine such as tablets or capsules get watered down and become much less effective due to stomach acids and digestive enzymes, before they eventually get into the bloodstream. Bypassing the stomach and liver means a much greater percentage of the active ingredient goes straight into the bloodstream where it's needed and in the case of neuropathy medicinal properties are concentrated in the local tissues.

Drugs enter different layers of skin via intramuscular, subcutaneous, or transdermal delivery methods.

Imagine receiving your medical treatment right in the comfort of your own home if you cannot get to the warm sea water.

Transdermal magnesium therapy is ideal for pain management, diabetic neuropathy and inflammation. The combination of heat and magnesium chloride increases circulation and waste removal. The therapeutic effect of magnesium baths is to draw inflammation out of the muscles and joints. Magnesium chloride, when applied directly to the skin is transdermally absorbed and has an almost immediate effect on pain.

What better way to reduce or eliminate pain then by simply taking a therapeutic bath or rubbing magnesium chloride substance in liquid

form directly onto the skin or affected area of the body? From the pain of sports injuries to low back pain and sciatica, headaches, relief from kidney stones, the pain of restless legs, arthritic pain, and just about every painful condition imaginable will in all likelihood benefit from medicines applied topically.

Virtually all the components of the Metabolic Syndrome of diabetes, high blood pressure, obesity and lipid disorders are associated with low magnesium.

Dr. Michael R. Eades

Dr. Eades insists that the entire Metabolic Syndrome is nothing but a manifestation of a magnesium deficiency. This is not an exaggeration but in my soon to be announced book *New Paradigms in Diabetic Care* we will uncover keys like mercury poisoning as well as fungal infections in addition to this important inflammation story that combine to destroy our metabolic functions. In three books now I have written about the magnesium story and about how, when deficient, just about everything that can go wrong in human physiology does. In the diabetes book I also examine calcification issues, raw food and low carbohydrate diets, vitamin D and magnesium deficiencies and the use of magnesium chloride (transdermally and orally administered), sodium bicarbonate, sodium thiosulfate, alpha Lipoic Acid and many other things that will mean a world of difference to the crumbling metabolic function of a great part of the human race.

Dr. Eades asks, "Why are so many people deficient in magnesium? Because there are no single foods that contain huge amounts of magnesium, and because there is no single food containing large amounts, there is no magnesium lobby. Look at calcium. Thanks to the dairy industry, we are constantly told that we need to get enough calcium, and we're told right where we can get it. Milk and cheese. Same with vitamin C. The orange juice people never let us forget. Not so with magnesium, so no one really thinks of it. Another reason that many people are magnesium deficient is that they drink bottled water or softened water. In the old days everyone drank well water or water from streams, both of which contain large amounts of magnesium. Magnesium is removed when water is softened and it isn't in large amounts in most of the bottled waters that are available."

Inflammation contributes to the pro-atherogenic changes in lipoprotein metabolism, endothelial dysfunction, thrombosis, hypertension and explains the aggravating effect of magnesium deficiency on the development of metabolic syndrome.

Dr. Andrzej Mazura

Dr. Andrzej Mazur, et. al.¹ have shown in experimentally induced magnesium deficiency in rats that after only a few days a clinical inflammatory syndrome develops and is characterized by leukocyte (white blood cell) and macrophage activation, release of inflammatory cytokines and excessive production of free radicals. "Magnesium deficiency induces a systemic stress response by activation of neuro endocrinological pathways," writes Dr. Mazur. "Magnesium deficiency contributes to an exaggerated response to immune stress and oxidative stress is the consequence of the inflammatory response," he continued.

Long-term air pollution exposure is associated with neuroinflammation, an altered innate immune response, disruption of the blood-brain barrier, ultrafine particulate deposition, and accumulation of amyloid beta-42 and alpha-synuclein in children and young adults.

Magnesium-deficient rats develop a generalized inflammation.
Dr. Sophie Begona

It turns out that statins don't just lower cholesterol levels; they also reduce inflammation. The lipid hypothesis of heart disease is rapidly being supplanted by the inflammatory hypothesis. The researchers who have spent their careers doing cholesterol research are falling further and further into disfavor as most scientists are showing graphs demonstrating that elevated cholesterol in combination with an elevated C-reactive protein is a better gauge of heart disease risk. It seems that without the inflammation elevated cholesterol is not a threat after all.

Today the most prescribed of all are drugs is used to lower "bad" LDL cholesterol. For those who are still interested in the cholesterol connection niacin (vitamin B-3) in high doses is as effective, much cheaper, and most importantly, far safer than any drug.⁴ Niacin also dramatically lowers triglycerides. The New York Times said, "An effective HDL booster already exists. It is niacin, the ordinary B vitamin. Niacin can increase HDL as much as 35 percent when taken in high doses, usually about 2,000 milligrams per day . . . and it has been shown to reduce serum levels of artery-clogging triglycerides as much as 50 percent."

Inflammation is a response from your immune system in response to an irritant. For example, if you sprain your ankle, your immune system creates a protein called a Circulating Immune Complex (CIC for short). The CIC travels down to the injured ankle and causes pain and swelling. The pain you feel is to inform you of the injury or damage. And the swelling is protective as it prevents you from moving it and

causing more irritation. This is also your body's way of running to the problem with fresh blood, antibodies and vital cells in order to begin healing and repairing the damage.

Then what normally happens is our bodies produce proteolytic enzymes which counteract the inflammation, and things return to normal. That's why a sprained ankle as a young child heals within a few weeks at most, but can take six weeks or more for an adult of say 45. The problem is, after around age 25, our production of these enzymes drops off almost completely so there is nothing to tell the body to stop the inflammation. These enzymes are also responsible for cleaning the blood, fighting off viral and bacterial infections and breaking down excess fibrin (scar tissue). Most if not all of these enzymes are mediated by magnesium meaning as magnesium levels drop off so do the activities of these crucial biological magnesium sensitive enzymes.

Enzymes break down scar tissue and fibrosis. Fibrosis is scar tissue that builds up in our bodies and over time creates some much restriction and strain on our organs that they can no longer function properly. Enzymes also clean the blood of excess fibrin that causes the blood to thicken, which sets us up for clots, which can cause heart attack or stroke. Enzymes also help take some of the strain off of the liver by keeping the blood clean and not allowing it to thicken beyond normal. Enzymes are very important in inflammation and enzymes bring us back to their fundamental supporter, which is magnesium.

When I received the following account from my research assistant Claudia French, who is an RN in an acute care psychiatric hospital, I realized that we should address the issue of magnesium, inflammation and pain more directly.

Yesterday I witnessed one of the most amazing benefits of transdermal magnesium I have seen. I work with another RN who is afflicted with arthritis, especially in her hands, and frequent muscle cramping/spasms in her legs. She has been using magnesium but became lax. Before leaving for work yesterday I received a phone call from her begging me to please bring with me some magnesium oil, as her hands were so cramped up and painful that she could barely stand to continue working.

When I got there, her hands and fingers were very contorted in spasm. Her fingers were curled up and stiff and her legs were cramping badly. She reported they had been this way all day, and the pain was driving her to tears. She immediately slathered the magnesium oil all over her

hands. We were in report and she wanted it on her hands right away so the entire nursing staff watched and within 5 minutes you could visibly see her fingers extend back to normal and the finger movement return. We could literally see the relaxation taking place. It was simply amazing. Within minutes her hands were completely relaxed and functional again and stayed that way the remainder of the evening. She also applied the magnesium to her legs and found relief. About 30 minutes after applying the oil, she held up her hands for everyone to see, and showed us the arthritic nodules on some fingers. She described how painful these always are to touch. But she poked and prodded them telling us how there was no pain now. She was able to continue working and doing the extensive writing that is a large part of our work without any further discomfort.

Pain relief and muscle relaxation for people with arthritis and muscle cramping is an important and significant benefit of magnesium oil. The rapid relief, visible to us all was really amazing! The following day she reported that she'd gotten the first restful night of sleep in many days. The pain was not waking her up.

Principles and Practices of Transdermal Medicine

Transdermal medicine delivers medications to the exact site of injury/pain.

Transdermal medicine is ideal for pain management as well as sports and pediatric medicine. In fact it is one of the best ways of administering medicines quickly and effectively. Transdermal methods of delivery are widely used because they allow the absorption of medicine directly through the skin. Gels, emulsion creams, sprays and lip balm stick applicators are easy to use and are effective in getting medicine into the blood stream quickly.

Transdermal delivery of medicines is generally considered safer, more efficient, more convenient and less painful than injections or IV's.

Transdermal magnesium therapy in particular offers an exciting breakthrough in sports medicine. Coaches can now treat injuries, prevent them, and increase athletic performance all at the same time. Transdermal magnesium chloride mineral therapy enhances recovery from athletic activity or injuries. It reduces pain and inflammation while propagating quicker regeneration of tissues. Topical application of magnesium chloride increases flexibility, which helps avoid injury. It also increases strength and endurance. Transdermal Magnesium Therapy is a boon for athletes, coaches and doctors who practice sports medicine.

The concentration of the applied dose, the surface area of the body, and the elapsed time the chemical is on the skin are the main considerations affecting absorption. As the concentration of a drug is increased, the total amount absorbed into the skin and body also increases. Increasing the surface area of the applied dose also increases penetration.

Penetration occurs over time. The longer the substance is on the skin, the greater the chance for continued penetration. The total amount of a drug absorbed during a 24-hour period may be different for a single application as opposed to the same amount applied in divided doses. In other words, applying a medicine once a day in the morning delivers a different concentration as opposed to applying a medicine 3 times a day 8 hours apart.

Herbal poultices, therapeutic baths, steam and dry saunas, transdermal patches, transdermal magnesium and transdermal iodine therapy rely on the permeability of the skin for either introducing substances into systemic circulation via the skin or mucous membranes, or for drawing toxic substances out of the system via the eliminative channels of perspiration.

When using transdermal medicines one has to be aware that:

Applying more of a substance increases the amount absorbed.

One also has to be aware of the purity of the product one is putting on ones skin since the impurities are also absorbed. The purest magnesium oil I have found comes from deep underground in Europe from a 250 million year old trapped sea. Ancient Minerals has my full product endorsement and I am just testing out their new gel product and find it excellent for treating severe back conditions.

Magnesium Massage is one of the ultimate hands on treatments for body workers as well as Chiropractors and Osteopaths. Anything one does to the body with ones hands is enhanced when you put magnesium oil or gel onto the body. Magnesium oil turns a casual massage into a medical treatment that is super relaxing as it is therapeutic.

What is essential to remember about treating pain with magnesium is that it treats both the symptom and the cause of pain. Meaning the cause of the pain can often be traced back to a magnesium deficiency.

There are not too many medicinal substances or medicines that can make this claim. It should be noted that pain management with magnesium employs magnesium chloride applied transdermally to the

skin. Dr. Linda Rapson, who specializes in treating chronic pain, believes that about 70 per cent of her patients who complain of muscle pain, cramps and fatigue are showing signs of magnesium deficiency. "Virtually all of them improve when I put them on magnesium," says Rapson, who runs a busy Toronto pain clinic. "It may sound too good to be true, but it's a fact." She's seen the mineral work in those with fibromyalgia, migraines and constipation. "The scientific community should take a good hard look at this."

Lynne Suo is one of Dr. Rapson's patients. She had been using painkillers and steroids for years to try to ease the pain of her arthritis and fibromyalgia. Dr. Rapson started her on 675 units of magnesium a day. Within days, Suo called Dr. Rapson to report a surprising change. "I went from being in constant pain almost throughout the day and night to having moments of pain. And for me that was a huge improvement," says Suo, a former college English teacher. She dismisses suggestions that the change is a placebo effect. "I was not one day without pain and now I don't have to take heavy pain medication," she reports.

The granddaddy of all anti-inflammatories is aspirin, which can cause more serious problems than it can alleviate. Most pain and anti-inflammatory medications are not safe; even the over the counter pain medications hold unforeseen dangers. Despite more than a decade's worth of research showing that taking too much acetaminophen can ruin the liver, the number of severe, unintentional poisonings from the drug is on the rise, a new study reports.² The drug, acetaminophen, is best known under the brand name Tylenol. Compounds containing Tylenol include Excedrin, Midol Teen Formula, Theraflu, Alka-Seltzer Plus Cold Medicine, and NyQuil Cold and Flu, as well as other over-the-counter drugs and many prescription narcotics, like Vicodin and Percocet.

People with poor quality sleep or sleep deprivation exhibit increased levels of interleukin-6 (IL6), the chemical that causes inflammation throughout the body. According to Dr. J. Durlach, the biological clock and magnesium status are linked, and a balanced magnesium status is important for the function of the mysterious pineal gland. Dr. Durlach sees the psycholeptic sedative effects of darkness amplified by magnesium. There probably is a strong relationship between melatonin and magnesium; certainly relative amounts of light and darkness affect the pineal gland and its production of melatonin. Magnesium provides a calming effect that allows for deeper relaxation and better sleep. Magnesium is considered the "antistress" mineral. It is a natural tranquilizer which functions to relax skeletal muscles as well as the smooth muscles of blood vessels and the gastrointestinal tract.

According to the National Sleep Foundation approximately 70 million people in the United States are affected with sleeping disorders. Approximately 12 million Americans have restless legs syndrome, a sleep and movement disorder characterized by unpleasant (tingling, crawling, creeping and/or pulling) feelings in the legs, which cause an urge to move in order to relieve the symptoms. Magnesium supplements may be helpful for relieving restless leg syndrome (RLS) and for treating insomnia.

Depression also is correlated with inflammation. A study conducted by researchers at the Emory University School of Medicine found that psychological stress leads to an excessive inflammatory response in people. Their findings published in the American Journal of Psychiatry showed that individuals who suffer from depression are more likely develop an inflammatory response due to the emotional disorder than people who are not depressed.³ It should come as no surprise that magnesium supplementation has a great effect on depression.

In the final analysis there is no single medicine or nutritional agent that has the power to both treat and prevent chronic inflammatory conditions. Magnesium acts as a general cell tonic while it reduces inflammation and systemic stress. Equally it is important in overall energy (ATP) production, hormonal and enzyme production and function which all reflect powerfully on the process of inflammation.

Other Natural Allopathic Solutions

Another new study reveals that marijuana relieves pain that narcotics like morphine and OxyContin have hardly any effect on, and could help ease suffering from illnesses such as multiple sclerosis and diabetes. ⁴ Neuropathic pain is notoriously resistant to treatment with conventional pain drugs. Even powerful and addictive narcotics like morphine and OxyContin often provide little relief. This study leaves no doubt that marijuana can safely ease this type of pain.

Cannabinoids reduced inflammation in the brain and prevented cognitive decline. Cannabinoids have also been shown to alleviate neuropathic pain.

Dr. Gregory T. Carter, Clinical Associate Professor of Rehabilitation Medicine, University of Washington School of Medicine says, "Marijuana is a complex substance containing over 60 different forms of cannabinoids, the active ingredients. Cannabinoids are now known to have the capacity for neuromodulation, via direct, receptor-based mechanisms at numerous levels within the nervous system. These have therapeutic properties that may be applicable to

the treatment of neurological disorders; including anti-oxidative, neuroprotective, analgesic and anti-inflammatory actions; immunomodulation, modulation of glial cells and tumor growth regulation.⁶ Intracellular changes and altered signalling of the neurons seems to be the principle effects of the cannabinoids in marijuana.

Marijuana has strong anti-inflammatory effects. "This is why I believe that people who used marijuana a few decades ago are much less likely to develop any disease, such as Alzheimer's, that relies upon the slow development of brain inflammation," said Wenk. The recent discovery of an endogenous cannabinoid system with specific receptors and ligands (a compound that activates a receptor and triggers its characteristic response) has increased our understanding of the actions of marijuana. Excessive inflammatory responses can emerge as a potential danger for organisms' health. Physiological balance between pro- and anti-inflammatory processes constitutes an important feature of responses against harmful events.

<http://starfishproject.wordpress.com/2008/09/30/the-benefits-of-curcumin/>

Turmeric (*Curcuma longa*, a member of the ginger family) is a plant that, when ground to a yellowish powder, becomes the main ingredient of curry powder, the well-known South Asian spice. The most important chemical present in turmeric is Curcumin. This natural product, a polyphenolic molecule, has numerous biological and pharmacological properties. Chief among these are anticancer, anti-inflammatory, antioxidant and antiamyloid effects. While the health benefits of turmeric have been known for thousands of years going back to its origins in ancient India, research into the medical uses of curcumin as the active principle has been relatively recent, spanning only a few decades. In a 2005 Wall Street Journal article entitled, "Common Indian Spice Stirs Hope", medical research into the health benefits of curcumin was described as "exploding".

According to the National Institutes of Health, curcumin is currently being tested in almost a dozen human clinical trials as a single therapeutic agent or in combination with other agents for the treatment of conditions such as pancreatic cancer, colon cancer, adenocarcinoma, precancerous gastrointestinal polyps, myelodysplastic syndromes, Alzheimer's disease and psoriasis. Clinical trials of curcumin for cancers of the digestive tract no doubt were inspired by epidemiological data that show a decreased incidence of colorectal cancer in ethnic groups that regularly ingest curry as part of their normal diet.

Cancer prevention and therapy are the major focus of studies of the medical uses of curcumin. The cancer chemoprevention effects of topical curcumin application are well documented. Curcumin inhibits chemical carcinogen-induced tumor initiation as well as tumor promotion, which can be induced by such agents as the phorbol esters, plant-derived chemicals known for their tumor promoting capabilities. Thus, such studies have one plant-derived natural product (curcumin) being used to counteract the adverse effects of a second natural product (phorbol). Based on in vitro and in vivo findings, curcumin is now being tested in human clinical trials as a cancer chemopreventative agent. This is being done in addition to its use in clinical studies as a treatment for the precancerous conditions noted above. Curcumin has also been tested in vitro and in vivo as a cancer chemotherapeutic agent, either by itself or in combination with other anticancer agents. It is effective against such cancers as melanoma and various carcinomas. It is believed that an important mechanism by which curcumin inhibits or kills cancer cells involves the modulation of various intracellular signal transduction pathways. Among the current human clinical studies employing curcumin as a cancer chemotherapeutic agent are trials of curcumin as a single agent or in combination with gemcitabine for treating pancreatic and colorectal cancers.

One of the more recent findings with respect to curcumin's anticancer properties is that it can selectively induce apoptosis (programmed cell death) in cancer cells without harming normal cells. Another recently reported anticancer property of curcumin is its ability to inhibit NF-kappaB (NF-kB), a transcription factor that can be overexpressed in many cancer cells, according to Dr. Dennis Liotta of Davidson College. Of particular interest is the ability of curcumin to inhibit cancer cell metastasis. Experiments conducted by Dr Bharat Aggarwal and colleagues from the University of Texas MD Anderson Cancer Center in Houston utilized a mouse model of cancer metastasis. Groups of mice were treated either with the anticancer paclitaxel (Taxol®), curcumin, or a combination of paclitaxel and curcumin. After several weeks, it was found that the mice treated with curcumin and the combination therapy had reductions in lung metastases of about 50% and 75%, respectively, in comparison to an untreated control group. In contrast, the paclitaxel-treated mouse group had only a 30% reduction in metastases.

As with other antioxidants, curcumin may have utility in treating Autism Spectrum Disorder, as patients may have increased sensitivity to, or decreased protection from, damage caused by chemical free radicals or UV radiation (oxidative stress). According to Dr. Woody R. McGinnis, the use of antioxidants in these patients may markedly reduce autistic behavior.

Curcumin may also have potential in combating Alzheimer's disease. It has been found both in vitro and in vivo that curcumin can inhibit the production and accumulation of beta-amyloid, a protein that has been associated with the pathogenesis of Alzheimer's disease. Curcumin's antiinflammatory properties may also play a role in its potential utility as an Alzheimer's preventative or therapy. In fact, researchers using a genetically altered mouse model of Alzheimer's disease noted that not only can curcumin inhibit beta-amyloid accumulation in the brain, it can also promote the reduction of amyloid plaques that are characteristic of the disease.

Certain enzymes involved in the inflammatory response can be inhibited by curcumin. Owing to its antiinflammatory properties, curcumin in topical form has been used as a psoriasis treatment. Additionally, curcumin topically applied to mouse skin has inhibited chemically induced inflammation. Curcumin has also been investigated in several studies as a topical wound-healing agent. The wound healing benefits of curcumin may be related both to its antioxidant effects (reduction of oxidative stress) as well as to its antiinflammatory properties.

The anti-infective properties of curcumin are also of interest, particularly the use of curcumin in the treatment of sexually transmitted diseases. For example, curcumin was reported to be active as an inhibitor of the bacterium *Neisseria gonorrhoeae*, the causative agent in gonorrhea.

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