

# ISAGENIX SCIENCE

## Banishing the Deadliest Fat

*How Isagenix products target the most harmful effects of obesity*



*The most dangerous form of fat is intra-abdominal fat, or visceral fat, which raises the risk of several chronic diseases including heart disease.*

If you're like many Americans, when you were younger you were able to eat with gusto and without a care in the world. Even if you weren't working out or exercising on a regular basis many of us could seemingly consume whatever, whenever. But now, the days and nights of youth-filled binges are long gone and you may actually exhibit the dreaded "middle-age spread." Or worse, you are overweight or obese. Today, obesity is the single most important health issue facing the United States. More than one-third of adults and almost 17 percent of children and adolescents are obese. That's

according to new data from the National Health and Nutrition Examination Survey, released from The U.S. Centers for Disease Control and Prevention (CDC).

The excess adiposity ("fatness") that exists in obese individuals is associated with serious adverse health effects including increased susceptibility to cardiovascular disease and type 2 diabetes. With obesity-related healthcare spending at about 5 to 10 percent of all health care costs, it's a problem that clearly stresses an already unstable economy.

Obesity is a complex, dynamic process involving genes and hormones; however, the most

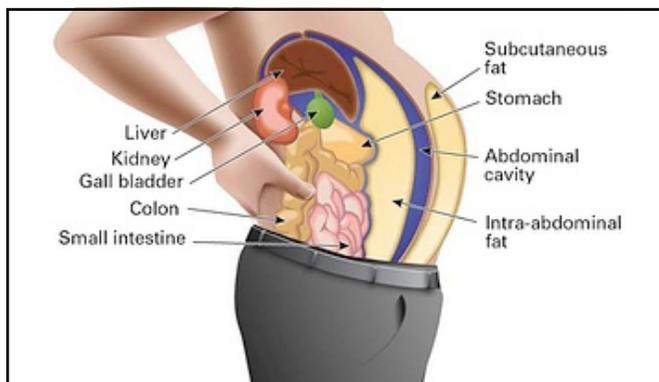
### Suk's Letter

The obesity epidemic in North America shows no sign of relenting and of utmost concern is visceral fat, which puts strain on organs and raises our risk of several chronic diseases including heart disease. In this issue of *Isagenix Science*, we explore visceral fat's many harms and its relation to stress and telomerase activity. We also discuss why being on an Isagenix system—which delivers quality whey protein, calcium, vitamin D, and adaptogens—represents a powerful step to ridding yourself of this deadly kind of fat, protecting your body, and allowing you to age gracefully.

Live well and adventurously!

- Suk Cho, Ph.D.

amendable lifestyle factor is simply our excessive calorie consumption relative to our energy expenditure. Not surprisingly, according to a 2010 consumer survey, 55 percent of us are actively trying to lose weight. But to address the issues of prevention, treatment, and lifestyle factors, you need to understand body fat—what it is, what it does, and how different types of body fat are associated with health and disease.



**Body Fat is an Active Endocrine Organ**

Previously, body fat was thought to be just that: fat. However, scientists have known for some time that body fat is indeed no less an organ than the liver or kidney due to its metabolic activities, its target by hormones, and its ability to secrete cytokines—those proteins with hormone-like effects. Body fat comes directly from our diet. Foods contain varying levels of carbohydrates, proteins, and, of course, fat. Alcohol, too, provides potential energy, more than the other macronutrients except for fat, that contributes to body fat.

Now, when examining body fat and body composition, researchers have generally divided fat into either subcutaneous or visceral fat.

Subcutaneous fat is fat accumulated in the lower body, often visualized as producing a “pear shaped” appearance. This body shape is more frequently associated with the adiposity of women. In contrast, visceral fat is the fat *within* your belly (not the fat hanging over your belt) and is associated with the “apple shaped” appearance observed more frequently in men. Visceral fat is also known as central or abdominal fat.

In general, visceral fat is a relatively small proportion of total body fat. Why is it so important? It is chiefly because, unlike subcutaneous fat, visceral fat bathes the liver, kidneys, pancreas, and other organs that are necessary for maintaining optimal health and wellness. Because of its proximity, this type of fat has serious implications on health.

**Visceral Fat is Inflammatory**

Visceral fat is deleterious to health also because it is metabolically very active, causing low-grade inflammation within the body. In obese individuals, visceral fat consists of fat cells (adipocytes) that

stimulate and secrete a variety of potent chemicals as well as activating cellular pathways that are implicated in disease. For example, visceral fat can stimulate the production and release of adipokines such as tumor necrosis factor and interleukins, which are potent pro-inflammatory mediators. These molecules travel to both neighboring and distant cells stimulating recruitment of other cells, generating yet more pro-inflammatory mediators and causing a profound cascading event. Visceral fat accumulation is also associated with insulin resistance, which is a primary factor in type 2 diabetes and other obesity-related conditions. Adipocytes in visceral fat can also increase proteins that promote additional fat storage, a process known as adipogenesis. Visceral fat accumulation in the liver is also a precursor to much more serious liver problems such as scarring (cirrhosis), and even liver cancer. The cumulative effect of these pathophysiological events causes glucose impairment, increased triglycerides, altered lipoprotein balance, and high blood pressure—collectively comprising the metabolic syndrome, a hallmark for cardiovascular disease and type 2 diabetes among other associated health risks.

“Visceral fat bathes the liver, kidneys, pancreas, and other organs that are necessary for maintaining optimal health and wellness.”

**What Can Be Done to Reduce Visceral Fat?**

Luckily, there are things that can be done to reduce visceral fat, but not without effort. First, the individual must lose weight. Exercise is certainly one of the most effective lifestyle interventions for reducing visceral fat. In one recent study, researchers found that aerobic exercise alone significantly reduced visceral fat by 12 percent (1). Next, loss of visceral fat requires modifications from a typical high fat, high-calorie consumption pattern.

Among nutrients targeted for assisting us in promoting fat loss are dietary fiber and protein. In fact, a recent study found that intake of soluble fiber was directly associated with reductions in visceral fat (2). Additionally, consumers of Isagenix products

already know about the great features of our whey protein-based products such as IsaLean Shakes and IsaPro. Among the myriad of benefits of whey protein that will help individuals reduce their visceral fat include whey's satiating properties, compared with carbohydrates, and its positive effects on metabolism. An increase in dietary protein also facilitates muscle protein synthesis, which has the additional benefit of stimulating body metabolism. Even better would be to incorporate the Isagenix Cleansing and Fat Burning System into an overall dietary strategy to metabolize visceral fat. In fact, a review of the literature by Krista Varady at the University of Illinois-Chicago has found that either daily caloric restriction or intermittent fasting reduces stubborn visceral fat by 5 to 15 percent (3). Since both the 30- and 9-day fat burning and nutritional cleansing systems feature aspects of caloric restriction and intermittent fasting it makes perfect sense that the Isagenix way would help reduce toxic, health-robbing visceral fat.

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BEATING STRESS REDUCES VISCERAL FAT AND GUARDS TELOMERES



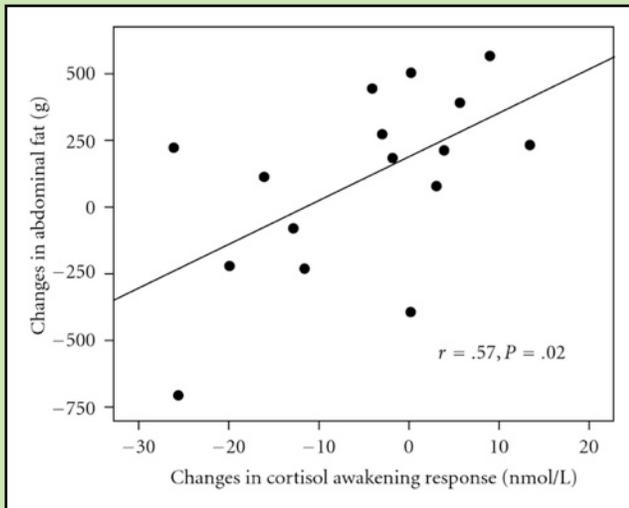
If getting in shape and losing that belly are on this year's to-do list—as they should be—then why not add stress reduction to the list? Chronic stress not only causes mental strain, but also higher concentrations of stress hormones such as cortisol that are associated with increases in visceral fat. Part of that reason, unfortunately, may be because eating sweet and fatty foods is one of the preferred choices of Americans for managing chronic stress. Both visceral fat and stress are also linked to oxidative stress, inflammation, and shorter telomeres, which raises risk of chronic disease.

Take heed: new findings published in the *Journal of Obesity* (1) suggest that combining an easy

technique called mindful eating with stress management can reduce cortisol levels and visceral fat.

Interestingly, a second study with the same subjects (2) found that the reduction in cortisol was linked to increased activity of the enzyme telomerase, which is needed to restore telomere length.

In the first study, researchers from the University of California, San Francisco, randomized 47 women categorized as chronically stressed, overweight, and obese to either a mindful eating training group or a control group. The mindful eating group maintained their body weight while those in the control group did not have a drop in cortisol and continued gaining weight. However, the mindful eating training group showed significant drops in cortisol after waking, which is generally when the hormone reaches its peak levels. The researchers found that the women who received the training had greater body awareness and reduced cortisol secretion, chronic stress, and visceral fat. The women with the greatest reductions in cortisol or stress also had the greatest decreases in visceral fat.



Scatter plot of correlation between changes in cortisol awakening response and changes in abdominal (visceral) fat among treatment group participants.

All of the women attended one session on the basics of a healthy diet and exercise. The training group consisted of teaching the women mindful eating practices such as paying attention to the physical feelings of hunger, cravings, fullness, and taste satisfaction as well as stress-reduction techniques.

The women in the training group attended classes once a week for nine weeks and a seven-hour intensive silent meditation retreat during the sixth week. Throughout the trial, the women were asked to do daily meditation exercises for 30 minutes and to apply mindful eating at meals.

The researchers gauged psychological stress before and after the study by using established survey methods combined with cortisol and fat measurements. What the researchers were looking for was a change in the amount of overall weight and visceral fat, as well as a change in cortisol secretion shortly after waking. They found it.

**Less Cortisol Leads to Less Visceral Fat, More Telomerase Activity**

For the second study, published in the journal *Psychoneuroendocrinology*, some of the same researchers measured telomerase activity of the same women before and after the mindfulness training treatment. Women who received the training and who decreased their stress and belly fat also showed a greater increase in telomerase activity.

A link between improved telomere function and reduced fasting blood glucose was also found.

“Improvements in stress, eating, and metabolic regulation may increase telomerase activity over time,” the study authors concluded.

The culprit in the deleterious effects that chronic stress has on the body looks to be the hormone cortisol, which increases as levels of stress increase. Though shorter bouts of cortisol secretion are normal and can have a stimulating effect on the body—as when the ability to run from danger is needed—the opposite is true of having continuously elevated cortisol levels. Chronically elevated cortisol levels result in a chain reaction where fatty acids from outlying areas move into the abdominal regions and build up belly fat. Chronically elevated cortisol levels also suppress telomerase, which can lead to more rapidly shortening telomeres and an acceleration of cellular aging.

**Stress-Reduction Tips**

- Practice mindful eating practices and meditate daily
- Exercise regularly.
- Take Ionix Supreme daily for adaptogens, which help neutralize the harmful effects of stress.
- Get on an Isagenix system to assist with visceral fat reduction.
- Get plenty of rest.
- Eat a diet high in fruits and vegetables.

**Isagenix and Stress**

An Isagenix system is an effective way of reducing harmful visceral fat through its application of Cleanse Days and Shake Days. The reduction of calories on Cleanse Days along with Cleanse for Life helps to stimulate fat burning and detoxification while Shake Days combine high-protein meal replacement shakes with healthy eating to maximize nutrition and muscle maintenance.

Additionally, Ionix Supreme, a unique tonic with adaptogens, increases the body’s ability to deal with stress and come out on top. Adaptogens are botanicals that mitigate the stress response,

lessening the harmful effects of stress hormones like cortisol on several body systems like the nervous and immune systems.

This year, don't let stress take over and unleash its havoc on the body. Instead, learn about mindful eating techniques and other stress-beaters including exercise, adequate amounts of sleep, and a diet rich in nutrient-dense foods such as fruits and vegetables, as well as Ionix Supreme for its adaptogens and other Isagenix products to reduce visceral fat.

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LOSING STUBBORN BELLY FAT IS EASIER WITH WHEY PROTEIN



Does the phrase “weight-loss plateau” ring a bell? If you’ve ever embarked on a weight-loss journey, more than likely it does. And now there’s good news—results from a new study suggest losing more visceral fat and gaining more muscle is easier by consuming more dairy. Specifically, the researchers credit the results to the whey protein fraction of milk.

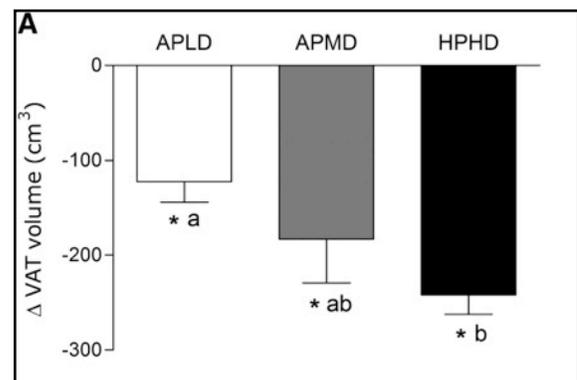
The research is yet more evidence that including a scoop of IsaPro to your 1 1/2 scoops of IsaLean Shake (35 grams of protein) is a surefire way to help bust belly fat and build more muscle in the long run. The study, published in the *Journal of Nutrition*, followed 90 overweight or obese women (aged 19-45) for 16 weeks as they

followed a weight-loss program—consuming 500 calories less than necessary to maintain weight. The women were randomly assigned to one of three groups: the first group consumed 0 to 1 servings of dairy each day (low dairy and adequate protein), the second group consumed 3 to 4 servings of dairy each day (medium dairy and adequate protein), and the third group consumed 6 to 7 servings of dairy each day (high dairy and high protein). One serving of dairy was equal to about 1 cup of milk or about 1.5 ounces of cheese.

The diets were designed such that the women consuming the most dairy were eating twice as much protein and fewer grams of carbohydrates than the other two groups, and twice the amount of dairy than the medium dairy group. All women engaged in an exercise program that included aerobic exercise five

times a week and resistance training twice weekly.

At the end of 16 weeks, the women in the high-dairy, high-protein group lost significantly more fat, particularly visceral fat, and gained more muscle mass than the women in the other two groups. All the women in the study lost weight, but lead author of the study, Andrea Josse, graduate student in the Department of Kinesiology at McMaster University, points out, “One hundred percent of the weight lost in the higher-protein,



Visceral adipose tissue (VAT) volume measured by MRI in overweight and obese women after 16 weeks intervention with adequate protein, low dairy (APLD), adequate protein, medium dairy (APMD), and high-protein, high-dairy (HPHD).

high-dairy group was fat. And the participants gained muscle mass, which is a major change in body composition.”

Body composition after weight loss is important because as with any weight-loss program, fat is lost, but at the same time so is muscle, which may help explain the “plateau” effect. Not only that, but muscle plays a crucial role in regulating glucose and fat levels in the blood, meaning that losing muscle could have negative effects on long-term metabolic health.

Josse also noted that, “Fat in the abdomen [visceral fat] is thought to be especially bad for cardiovascular and metabolic health, and it seems—according to what we found in this study—increasing calcium and protein in the diet may help to further promote loss of fat from the worst storage area in the body.”

Finally, the authors of the study suggest that the reduction of fat observed with the higher dairy consumption is “likely related to other bioactive components such

as the protein fraction [whey] rich in branched-chain amino acids (leucine, isoleucine, and valine).”

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## LOW-GLYCEMIC DIET IMPROVES INFLAMMATORY PROFILE OF VISCERAL FAT

One of the ways that excess fat harms the body, especially visceral fat, is by churning out pro-inflammatory proteins. These hormones play a central role in potentiating insulin resistance and hyperglycemia, raising LDL cholesterol and triglycerides, and damaging cells with oxidative stress.

Now results of a new study (1) suggest that eating a low-glycemic diet—rich in foods containing carbohydrates that are slowly absorbed into the bloodstream—significantly lowered markers of inflammation and also increased a hormone that helps in regulating the metabolism of sugar and fat.

The study, published in the February issue of the *Journal of Nutrition*, randomized 80 healthy men and women to a controlled feeding trial. Half of the participants were normal weight and half were overweight or obese.

The researchers, from the Fred Hutchinson Cancer Research Center in Seattle, found through subjects' blood samples that C-reactive protein, a biomarker of inflammation, was reduced by about



22 percent among the overweight and obese subjects who followed the low-glycemic diet.

“This finding is important and clinically useful since C-reactive protein is associated with an increased risk for many cancers as well as cardiovascular disease,” said lead author Marian Neuhouser, Ph.D., R.D. “Showing that a low-glycemic-load diet can improve health is important for the millions of Americans who are overweight or obese.”

The researchers also found among the overweight and obese subjects that the low-glycemic-load diet moderately increased levels of the protective hormone, adiponectin. Adiponectin improves insulin sensitivity and increases fatty acid oxidation.

For two 28-day feeding periods, the subjects ate a diet featuring high-glycemic-load carbohydrates, and then a diet featuring low-glycemic-load carbohydrates. The diets were designed to maintain weight and while the type of carbohydrate and amount of fiber differed, the overall amounts of carbohydrates, calories, and other nutrients were the same.

“Dietary patterns that rapidly increase blood glucose and insulin concentrations postprandially (i.e., high GL) not only stimulate insulin resistance but also induce an inflammatory response due to the acute excess of cellular glucose,” the authors wrote.

High-glycemic-load carbohydrate sources are usually low in fiber and include products made with white flour, sugar-sweetened drinks and desserts, as well as fruit in canned syrup. Low-glycemic carbohydrate sources are generally higher in fiber or protein and include whole-grains, kidney beans, pinto beans, soy beans, lentils, milk, as well as fruits such as apples, oranges, grapefruits, and pears.

Several Isagenix products can complement a low-glycemic diet. For example, IsaLean Shakes and Bars are designed with a low-glycemic profile. Don't be fooled by how delicious those bars taste either. They've each been independently tested by Brigham

Young University researchers proving they don't spike blood sugar (2;3).

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## CALCIUM AND VITAMIN D ASSIST IN VISCERAL FAT MANAGEMENT



Long-known for their essential roles in bone metabolism, calcium and vitamin D are two nutrients speculated to assist in weight-management. Epidemiological studies suggest that increased calcium and vitamin D intake can lead to long-term weight and fat losses.

Evidence indicates that these nutrients may act at the level of the gastrointestinal tract by blocking the absorption of fat, or by suppression of hunger leading to reduced meal intake, prolonged time between meals, and reduced food intake on subsequent days.

Recently, two parallel, double-blind, placebo-controlled trials, published in the *American Journal of Clinical Nutrition*, studied the

effects of calcium and vitamin D on body weight and visceral fat in overweight and obese subjects following moderately reduced-calorie diets. For 16 weeks, 171 men and women drank either regular orange juice as a control or calcium-and-vitamin D fortified orange juice three times per day. The fortified juice provided a total daily dose of 1,050 milligrams of calcium and 300 IU vitamin D<sub>3</sub> (D<sub>3</sub>, or cholecalciferol, is the natural form of vitamin D synthesized in skin).

The groups did not show significant differences in total body weight, BMI, or waist circumference. However, interestingly, the subjects who supplemented with calcium and vitamin D showed highly significant reductions in visceral fat.

"Our results suggest that, in overweight and obese adults, a moderate reduction in energy intake and supplementation of calcium and vitamin D in juice beverages lead to a reduction in

intraabdominal [visceral] fat," wrote the researchers.

These findings are notable given the combination of obesity in the United States, the harmful nature of visceral fat, and the number of Americans with a moderate-to-severe deficiency in vitamin D and inadequate dietary intake of calcium.

Folks can be certain that they are receiving the proper amounts of vitamin D and calcium that they need when on an Isagenix system consisting of two servings of IsaLean Shake and Ageless Essentials Daily Pack. The products combined provide daily total of 2,320 IU of vitamin D<sub>3</sub> and 1,600 to 1,700 mg calcium for men and women, respectively.

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HEART HEALTH BEGINS WITH LOSING VISCERAL FAT



During the month of February, our minds may be on Valentine's Day romance, but we shouldn't forget to give a little love to our hearts. Our hearts work tirelessly, without rest or pause, over the course of our lifetimes providing us with an average of 70 to 75 beats per minute, or more than 100 thousand beats a day. With healthy weight, regular exercise, and a healthy diet, a typical human heart will beat around 2.5 billion times by age 70. Unfortunately, statistics point out that too many hearts fall short of that number. With February being American Heart Month, it's time to spread awareness that one in every three deaths is from heart disease or stroke.

What's more worrisome is that risk of heart disease may be underestimated, according to a new 50-year-long analysis performed by University of Texas Southwest Medical Center researchers. The researchers categorized for "high-risk" markers of high blood pressure, high cholesterol, overweight or obesity, history of smoking, and diabetes and found that the risk of death from heart disease for most adults remains high over a lifetime with white men having a 36 percent risk of death, black men having a 33 percent risk of

death, and women (black or white) having a 27 percent risk of death.

Previously, doctors have only flagged the presence of all or most of the risk factors as a cause for concern. The researchers, who published their findings in the *New England Journal of Medicine*, demonstrated that this approach is not adequate to predict development of heart disease—at least in the long-term. Moreover, they showed that people with just two or more risk factors increased their lifetime risk of developing heart disease by about 34 percent in men and 17 percent in women, compared to people with fewer than two risk factors.

Their findings may help explain why, according to the latest report (2) released by the American Heart Association (AHA) in conjunction with the Centers for Disease Control and Prevention (CDC), approximately one American dies of cardiovascular disease every 39 seconds, with nearly 33 percent of these deaths occurring before the age of 75, well before the predicted average lifespan for Americans of 78 years. Once again, these statistics are presented alongside the baffling reality that heart disease is completely preventable. Every risk factor can be mitigated by simply choosing a heart-healthy lifestyle.

How to begin the journey of taking the strain off your heart? Regular exercise and quitting smoking are critical, and so is eating a diet rich in antioxidants and fiber. However, excess weight, and especially visceral fat around

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the middle, can put major strain on the heart and contribute to risk factors such as high blood pressure, insulin resistance, high cholesterol, and elevated triglycerides.

Regardless of how we take care of ourselves, every heartbeat should serve as a small reminder to be heart healthy. The choices we make daily can help our hearts to continue beating strong as long as we live.

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