

MBP[®] Overview

Patented milk protein extract for Bone and Joint Support

What is MBP?

MBP is a natural protein that is contained in trace amounts in bovine milk and human milk.

Although milk contains protein in abundance, MBP accounts for only a small portion of milk's overall protein content. The effect of this protein on bone was discovered and was named MBP.

A multi-functional protein that works directly and/or indirectly on bone cells to form healthy bones.

The most important characteristics of MBP are that it increases the number of bone-forming osteoblasts (cells) and regulates the activity of bone-destroying osteoclasts (cells). However careful one is to ingest enough calcium, if the body's ability to form bone is impaired, the calcium does not adhere to the bone effectively. MBP is a multi-functional protein: by acting directly and/or indirectly on bone cells, it vitalizes the bone itself and promotes the bone formation, while at the same time inhibiting excess bone destruction (bone resorption).

Differences in function between MBP and other substances.

In recent years, the vitamin K in natto (fermented soybeans) and isoflavone in soybeans have become widely known as substances that contribute to the health of bones. Vitamin K acts mainly to promote bone calcification and reduce the number of osteoclasts, and isoflavone operates mainly to inhibit osteoclastic bone resorption. By comparison, a key characteristic of MBP is that it functions on both osteoblastic bone formation and osteoclastic bone resorption.

The Basics of Bone Structure

Why do broken bones mend and return to their normal condition? The reason is that they are live tissues.

Looking at the bones of dinosaurs on display in museums or the mock-up skeletons in science classrooms, it may be difficult to comprehend that bones are live tissues. However, the fact is that narrow blood vessels run lengthwise and crosswise inside the bone, and bone cells are vigorously active. These bone cells create new bone, which is why broken bones mend and return to their normal condition.

Bones are not made only of inorganic calcium.

Bones are not made only of calcium. Simply put, they are made of calcium and collagen, a type of protein. The structure of bones can be likened to that of reinforced concrete, with calcium corresponding to the cement and collagen to the reinforcing rods.

Bones are reborn little by little each day (remodeling).

Because bones are living organisms, metabolism continually takes place and old bone is replaced by new bone. In other words, bones are reborn little by little each day (remodeling). In adults, this cycle of remodeling is said to occur over a period of three years. Of course, from the time we are born, this metabolism of bones is repeated over and over, regardless of our current age.

Bones fill two major roles.

The bones of all land animals—including human beings—fill two major roles. The first role is to support the body: our strong skeletons allow us to live on land without collapsing under our own weight. The second

role is to act as a calcium storehouse. As a substance essential to the functioning of every type of human body cell and nerve transmission, calcium is stored in bones. Calcium is dissolved out of our bones and carried to the various body tissues as necessary.

Osteoblastic Bone Formation and Osteoclastic Bone Resorption Are the Remodeling Process in Bones.

Osteoblasts (bone creators) and osteoclasts (bone destroyers) are constantly at work in the bone remodeling process. Overall skeletal health requires the right proportion between these two types of body cells.

Why are bones reborn?

There is a reason our bones are reborn not only during the growth stage when bones grow rapidly, but also after we reach adulthood. The reason is to rejuvenate aged bones. Even healthy bones lose their resilience when they grow old. As our bones are reborn, their supple strength is sustained.

The function of osteoblasts.

Osteoblasts form new bone by creating collagen, the “reinforcing rods” of bones, and coat it with protein that acts as a “paste” to have calcium adhere to the collagen. The calcium carried by the blood naturally adheres to the area covered with “paste” and new bone is created.

The function of osteoclasts.

Osteoclasts are bone-destroying cells. Originating as a type of blood cell, these cells are stimulated by hormones and become differentiated into osteoclasts inside bone. These osteoclasts dissolve the calcium and collagen of aged bones with acid and enzyme. The dissolved calcium is again carried throughout the body through the blood vessels.

The problem with osteoclasts is their excess activity.

Osteoclasts are intrinsically important body cells that destroy bone to promote its rebirth and dissolve the necessary amount of calcium required by the body. However, when the body's hormonal and other balances are disrupted, osteoclasts at times dissolve more calcium than necessary. This situation is particularly conspicuous among postmenopausal women. In other words, the cause of osteoporosis is said to be calcium deficiency and “runaway” osteoclasts. Suppressing this excess activity of osteoclasts is important.

MBP Activates Osteoblastic Bone Formation and Regulates Osteoclastic Bone Resorption

MBP is a substance that works directly and/or indirectly on both osteoblasts and osteoclasts. At the same time as it activates osteoblastic bone formation, it suppresses the excess osteoclastic bone resorption. MBP supports the formation of healthy bones.

The key characteristic of MBP is that it works directly and/or indirectly on bone cells.

MBP's most important characteristic is that it works directly and/or indirectly on both osteoblasts and osteoclasts. It makes bones receptive to calcium while simultaneously deterring excessive dissolving of calcium and collagen out of bones. As a result, MBP keeps our bones vital and healthy.

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The calcium you ingest is wasted if it's not incorporated into your bones.

Because calcium cannot be synthesized within the body, it can only be obtained through meals or otherwise ingested. The calcium is absorbed from the intestine into the body and carried to the bones by the bloodstream. However, even though calcium is ingested, if it does not adhere to and is not incorporated into the bones, it is expelled from the body in the urine or feces.

MBP Improves Bone Metabolism for People in Each Age Group.

The following is an explanation of the functional relationship between bone-forming osteoblasts and bone-destroying osteoclasts for various age groups.

Growth Stage: Activate your bone development.

The growth period is a time when the metabolism is active and bones are vigorously formed—and destroyed. However, because the bone-forming function is more powerful than the bone-destroying function, the body grows larger. Diet and exercise are very important in promoting this growth function during this period. By the way, it is said that bone mass increases until about the age of 20 for the backbone and until about the age of 30 for the bones in the limbs.

Maturity Period: Take care to keep strong bones for the future.

From the 30s onward, our bodies are fully grown and have reached peak bone mass. This is also a period when the bone-forming function and bone-destroying function are in balance. Accordingly, at this time of life, a balanced diet is important for delaying the onset of future decreases in bone mass.

Old Age: Protect your bones from osteoporosis.

From the 40s onward, bone mass slowly decreases. This is a period when, on the whole, both the bone-forming function and bone-destroying function weaken, but the bone-destroying function is stronger. Osteoporosis sets in when this situation progresses to the level of illness. Consequently, it is extremely important to delay, as much as possible, the onset of bone mass reduction.

Why is osteoporosis prevalent among women?

The reason osteoporosis is prevalent among women is first and foremost that compared with men, women have smaller skeletons, so the maximum bone mass stored in the body is lower. However, in addition to this, the female hormone estrogen exerts a major influence. Estrogen functions to inhibit the bone-destroying function of osteoclasts, but the secretion of this hormone nearly ceases with the onset of menopause. This causes excess activity of osteoclasts, and bone is increasingly destroyed, leading to osteoporosis. It is anticipated that MBP will perform the role of controlling the excess activity of osteoclasts.

FAQ About MBP

Q1: MBP isn't necessary if I get lots of calcium, is it?

A: If your bone cells don't function properly, ingested calcium isn't incorporated into your bones.

Calcium is merely the material used to form bones. It is osteoblasts

that actually perform the task of forming your bones. Balance between osteoblasts and osteoclasts is important for the healthy rebirth of bones. No matter how much calcium you ingest, if your bones aren't receptive to the calcium, it isn't fully incorporated into the bones. Because MBP activates the function of osteoblasts and suppresses excessive activity of osteoclasts, it constructs the foundation upon which bones are built. MBP is an important substance that promotes more effective utilization of the calcium you obtain from milk and other sources and the formation of healthy bones.

Q2: For how long should I drink MBP?

A: With MBP, enhanced bone density has been confirmed after a period of six months. If possible, drink MBP daily over a long period of time.

In tests in which people drank MBP daily, improved bone metabolism has been confirmed after three months and enhanced bone density after six months. Because bone metabolism proceeds at an extremely gradual pace, it is important to drink MBP over a long period of time. Furthermore, as your bones are reborn each day, you should try to drink MBP daily.

Q3: Isn't MBP digested in the stomach?

A: The activity of MBP is resistant to digestion.

In experiments in which we artificially created MBP in digested form, the digested MBP worked on osteoblasts and osteoclasts in the same way as undigested MBP. These findings suggest that even if MBP is digested, the crucial components that work on the bones are delivered to the bones unchanged in nature. What's more, we found that the components of MBP that work on bone cells are absorbed through the small intestine.

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