

Bioactive Peptides -Meaning, Importance and Dairy as Source

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ARTICLE ID: 09

Introduction

Peptides are short sequences of amino acids, usually consisting of two to fifty amino acids. Proteins are made up of more amino acids than amino acids, which are also their building components. Because peptides are smaller and more easily broken down than proteins, the body may be able to absorb them more readily. They can enter the bloodstream faster because they can pass through the gut and skin more readily.

The peptides in supplements may come from trusted source plant or animal sources of protein, including:

- Eggs
- Milk
- Meat
- Fish and shellfish
- Beans and lentils
- Soy
- Oats
- Flaxseed
- Hemp seeds
- Wheat

Bioactive peptides, or those that are good for the body and may improve human health. Scientists are also interested in bioactive peptides. Each bioactive peptide has unique characteristics. Their sequence of amino acids determines the effects they have on the body.

Common peptide available supplements are:

Collagen peptides, which may benefit skin health and reverse the effects of aging.
Creatine peptides, which may build strength and muscle mass. Some people may take other



peptides and peptide hormones to enhance athletic activity. However, the World Anti-Doping Agency have banned many of these, including follistatin, a peptide that increases muscle growth.

People often use peptides for following effects:

- 1. Slow down the aging process:** A protein found in skin, hair, and nails is called collagen. The body may absorb collagen proteins more readily when they are broken down into collagen peptides. Collagen peptide supplements may help maintain healthy skin and delay the aging process. Skin wrinkles may be treated with dietary food supplements containing collagen peptides, according to certain research Trusted Source. These supplements may help increase skin moisture and suppleness, according to another study. Melanin, a skin pigment, may be stimulated by peptides, potentially improving the skin's resistance to UV damage. Peptides are another ingredient in topical anti-aging cosmetics; according to the producers, these ingredients can help firm the skin, lessen wrinkles, and improve blood flow.
- 2. Improve wound healing:** Collagen peptides may speed up the healing process for wounds because collagen is an essential component of good skin. Additionally, as antioxidants and inflammatory-reducers, bioactive peptides might enhance the body's capacity for healing. Antimicrobial peptides are a subject of continuing research since they may also speed up wound healing. Skin conditions like psoriasis, rosacea, and eczema may be exacerbated by extremely high or extremely low concentrations of specific antimicrobial peptides.
- 3. Prevent age-related bone loss:** Animal experimentation growing rats who also engaged in running activity showed an increase in bone mass in response to a moderate intake of collagen peptides, according to a reliable source. Collagen peptides may be a helpful strategy to prevent age-related bone loss, according to the study. But more study is required, particularly with humans.
- 4. Build strength and muscle mass:** Collagen peptide supplements may help older persons gain more muscular mass and strength, according to some reliable research. Participants in the study combined resistance training with supplement consumption. Additionally, creatine peptides may aid in muscle growth and strength enhancement. Although creatine protein powders have long been used by athletes, creatine peptides



are becoming more and more well-liked. Compared to creatine proteins, these specific peptides might be easier for the body to digest and so result in less stomach issues.

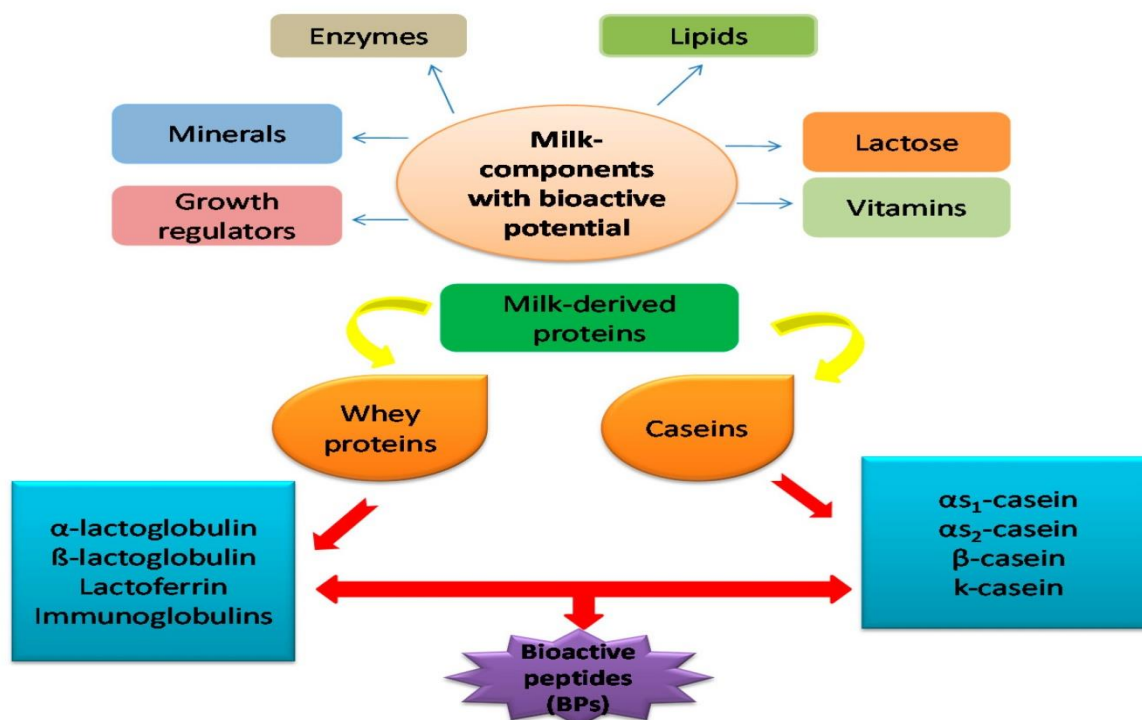
Milk as a source of Bioactive Peptides:

Milk contains a variety of vital macromolecules such as proteins, lipids, lactose, vitamins, minerals, and bioactive peptides. It is referred to be a "complete food" since a wide range of nutrients are available. Even while there are claims that milk fats have a negative impact on cardiovascular health, milk is still an unquestionably rich source of nutrients. This study emphasizes the importance of dairy products, such as milk, as sources of bioactive peptides. Milk proteins and their fractions are regarded as promising ingredients to create functional foods that promote health because they are the main sources of bioactive peptides. In addition to their nutritional value, milk's immunoglobulins are important for immune system maintenance.

When these milk proteins are hydrolyzed by enzymes or processed for food, they produce a range of bioactive peptides. In addition, a significant number of bioactive peptides are produced when lactic acid bacteria are used to ferment milk proteins. Screened from cow milk, these peptides have anti-tumor, anti-bacterial, anti-thrombotic, immunomodulatory, opioid, and ACE inhibitory properties. They also bind minerals. Apart from cow's milk, reports have also been made about the isolation and characterization of bioactive peptides from camel, buffalo, goat, sheep, and yak milk using various techniques. When fermented milk rich in bioactive peptides was consumed, blood pressure decreased. This demonstrated the peptides' anti-hypertensive properties.

The enzymatic hydrolysis of opioid peptides produced compounds with CNS pharmacological characteristics comparable to morphine. Lactoferrin is a glycoprotein that binds iron and has antibacterial and immunomodulatory properties. It has also been reported that lactoferrin and its derivatives influence the body's cytokine synthesis, which in turn influences immunological and inflammatory processes. It has been shown that casein-derived peptides have opioid, antimicrobial, and ACE inhibitory properties. Peptides developed in a similar investigation using donkey milk demonstrated both antioxidant efficacy and suppression of ACE. These experiments demonstrate that milk is the largest source of bioactive peptides, which have a variety of advantageous impacts on physiological health. Milk also poses as economical, abundant and healthiest source of bioactive peptides, compared to other

sources like animals and plants. Along with the milk, dairy products which are originated from milk also possess the bioactive peptides.



Dairy Products as Sources of Bioactive Peptides:

Other dairy products, besides milk, also contain a significant amount of bioactive peptides that are encapsulated in their proteins. Even though they come from milk, proteins from other sources perform physiological tasks that are typical of them. For instance, immunoglobulins, which are crucial to an organism's growth and development, are abundant in colostrum. Furthermore, it has a high concentration of proteins that fight microbes. When milk ferments, digestive enzymes can be used to extract bioactive peptides. The main sources of bioactive peptides are dairy products, such as fermented milk, cheese types, and milk protein hydrolysates.

It has been observed that fermented sour milk products have antihypertensive properties. *Lactobacillus* species were added to these drinks to promote fermentation, and the peptides that were produced as a result had anti-hypertensive properties. Numerous research has also reported on the physiological functions highlighted by screened peptides from fermented milks, yoghurt, and a range of cheeses. These peptides have positive effects on the neurological system, gastrointestinal system, and cardiovascular system.