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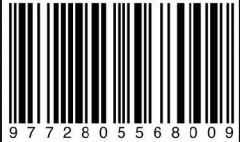
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Pemangkin Idea

Nutrient for Wound Healing



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ound healing mechanisms are commonly tangled with internal biochemical processes that require excellent coordination between tissues, cells, enzymes, proteins, and other healing elements.

Depending on its complexity, the wound healing mechanism is an energy-demanding process that can be enhanced by controlling and optimising the nutrient intake in daily diet. However, some acute or chronic wounds are more prevalent in patients with underlying comorbidities such as diabetes, obesity, malnutrition, cardiovascular disease, peripheral vascular, and connective tissue disease. Consequently, patients who suffer from the abovementioned diseases commonly require a strict diet for their wounds to fully recover. Therefore, studying the patient's health status is crucial for prescribing proper diet management during healing.

A holistic wound assessment should consider proper diet management to accelerate healing and control existing illnesses and conditions. For example, poor diet management and uncontrolled sugar intake for diabetic patients can cause their Diabetic Foot Ulcer (DFU) to become more susceptible to wound infection and necrosis, thus slowing down its recovery. An underweight or malnourished patient who suffers from venous leg ulcers should consider a high intake of supplements and a nutritional diet, which is not suitable as a recommendation for obese patients. Poor and insufficient nutrient intake can slow down wound healing activity and contribute to other complications, including severe infection, inflammation, high fever, increased pain intensity, and discomfort to the patient. Therefore, a proper diet that contains an adequate amount of proteins, carbohydrates, fats, vitamins (A, K, B complex, C, E), and minerals (iron, zinc, copper) are proven to be essential to assist with healing.





Upon digestion, proteins from chicken, meat, and fish are broken down into numerous amino acids that can assist in the inflammatory response and immune system during wound recovery. They become an essential precursor to produce antibodies, hormones, and enzymes, which are significant in promoting wound closure, enhancing angiogenesis, supporting the formation of new blood vessels, and synthesising collagen, which is suitable for reconstructing new skin layers. Then, the digestion of carbohydrates and fats from rice, wheat, bread, cake, and sugar will supply enough energy in the form of glucose to support all metabolic reactions throughout the healing activity. Other macromolecules such as lipids and fatty acids are also essential to support the progress of healing. They are used to manufacture cell membrane components such as phospholipids and cholesterol and are involved in the synthesis of extracellular matrix for newly developed cells. Then, the consumption of fruit, vegetables, and milk can provide additional supplements such as minerals (calcium, zinc, iron) and vitamins (A, K, E, C, B complex), which are significant for healing recovery, especially when the skin tissues start to rebuild itself. For example, vitamin A is helpful for the migration of white blood cells (macrophages, monocytes) and fibroblasts to the wounded area, while both calcium and vitamin K are involved in blood coagulation mechanism and bone development.

Next, the intake of vitamins E and C, either by topical or oral application, can minimise scar formation, promote wound closure, assist cell remodelling, enhance the mechanical strength of the skin, and produce an even skin tone. Vitamin E and zinc are required for the stability of the cell wall and modulation of the immune response. The combination of vitamin C and protein is needed for collagen deposition by maintaining the triple helix structure of the collagen, thus supporting the strength of newly developed skin. Meanwhile, iron in daily diet is also crucial during wound recovery as it helps synthesise red blood cells so that enough blood is supplied to the injury site, which ensures all the nutrients and healing components are fairly distributed in the affected area.

Lastly, drinking a lot of water is also vital for wound healing. As a major component of body fluid (blood, interstitial fluid) and cell cytoplasm, water has become a medium for all metabolic activities across the injury site and its surrounding area. Enough water can maximise the efficiency of cell migration and distribution of other healing factors, thus optimising the metabolic activities across the wounded area. Moreover, having enough water will prevent wound dehydration, which maintains wound moisture and reduces the risk of bacterial infection. Therefore, managing and consuming a proper diet is important to support intense metabolic reactions and high cellular activity for wound healing, thus avoiding impairments in healing.



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