

Insects Innovation in Gastronomy

COURSE SUPPORT



Episode 1: " Nutrition and Health: The Essential Role of Nutrients for Well-Being"

Disclaimer:

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Episode 1: Nutrition and Health: The Essential Role of Nutrients for Well-Being

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Episode 1: Nutrition and Health: The Essential Role of Nutrients for Well-Being

Synopsis

Nutrition is a fundamental pillar for maintaining health and improving quality of life. It is not simply about meeting energy requirements but ensuring that the body receives a complete range of nutrients necessary for the proper functioning of biological systems, disease prevention, and overall well-being. Every food we consume plays a role in regulating metabolism, repairing tissues, and supporting the immune system.

Nutrition is not a passive process but a constant dialogue between the body and what we consume through our diet. Every meal provides an opportunity to either support or compromise cellular function, directly influencing our energy levels, immune system, and even mental state.

Key Insights & Takeaways

Proteins and Their Amino Acids

Proteins are the "building blocks" of the body. Composed of chains of amino acids, these molecules perform crucial functions, such as tissue construction and repair, enzyme production to regulate chemical reactions, and the synthesis of hormones and antibodies. There are 20 types of amino acids, nine of which are essential, meaning they must be obtained through the diet as the body cannot synthesize them.

Among the essential amino acids:

- **Leucine:** Stimulates muscle protein synthesis and is particularly useful for recovery after exercise.
- **Lysine:** Essential for tissue growth and repair; also promotes calcium absorption and collagen formation.
- **Tryptophan:** A precursor of serotonin, the "feel-good" hormone that regulates sleep, mood, and appetite.

High-quality protein sources include lean meat, fish, eggs, dairy products, and legumes. Recent studies have highlighted that an adequate protein intake is particularly important in the elderly, to prevent sarcopenia (age-related muscle loss), and in athletes, to promote muscle recovery after training.

Carbohydrates: More Than Just Energy

Carbohydrates, often associated solely with energy, also play a crucial role in mood regulation and cognitive function. The brain relies almost exclusively on glucose for its functions. However, the quality of the carbohydrate source is crucial. There are two categories of carbohydrates: simple and complex.

- **Simple Carbohydrates:** Composed of one or two sugar molecules (monosaccharides and disaccharides), they are found in table sugar, honey, milk, and fruit. They provide immediate energy, but excessive consumption—especially of refined

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sugars—can cause blood sugar spikes and increase the risk of obesity and type 2 diabetes.

- **Complex Carbohydrates:** Made up of long chains of sugars, they are found in whole grains, legumes, and starchy vegetables. They release energy slowly, improving blood sugar stability. For example, a meal of brown rice and lentils provides long-lasting energy and improves gut health due to the fiber content.

A practical example is the difference between eating an apple and drinking a sugary juice. The apple provides not only glucose but also fiber, which slows sugar absorption and prevents blood sugar spikes. In contrast, a sugary juice can cause a rapid increase in blood sugar levels, followed by an equally rapid drop.

Fats: Misunderstood but Essential

Fats are often misunderstood. When consumed in the right proportions, they play a key role in health. Essential fatty acids, such as omega-3s, cannot be synthesized by the body and must be obtained through the diet. These fats are crucial for nervous system function and chronic inflammation prevention. Regular consumption of oily fish, flaxseeds, or walnuts can improve cardiovascular health and reduce the risk of neurodegenerative diseases.

Omega-3s, in particular, help lower blood triglyceride levels and improve cellular membrane flexibility, optimizing nerve transmission and brain functions. In addition to omega-3s, monounsaturated fats, found in foods like olive oil, avocado, and almonds, are known for their beneficial effects on cardiovascular health, helping to reduce LDL ("bad") cholesterol and increase HDL ("good") cholesterol.

Saturated fats, although often demonized, are still necessary in small amounts for hormone production and cellular membrane formation. However, they should be consumed in moderation, favoring natural sources like butter or dairy products over trans fats found in many processed foods, which can significantly increase the risk of cardiovascular diseases.

Vitamins: Essential for Vital Processes

Vitamins are organic compounds essential for the proper functioning of the body. They do not provide energy but regulate vital processes.

- **Vitamin C:** Strengthens the immune system and enhances the absorption of non-heme iron from plant sources.
- **Vitamin D:** Synthesized by the skin when exposed to UVB radiation, it is essential for bone health. Dietary sources include fatty fish like salmon and mackerel.
- **Vitamin K:** Crucial for blood clotting, found in leafy green vegetables.
- **B Vitamins:** Support energy metabolism and red blood cell production. For example, vitamin B12 is essential for the nervous system and is primarily found in animal products.
- **Vitamin E:** With powerful antioxidant properties, it helps protect cells from oxidative damage and supports immune function. Main sources include nuts, seeds, and vegetable oils such as sunflower oil.

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Minerals: Small but Mighty Nutrients

Minerals are equally important, performing specific and crucial roles:

- **Iron:** Essential for oxygen transport in the blood and anemia prevention. Found in red meat, legumes, and leafy green vegetables.
- **Calcium:** Fundamental for bone health and nerve transmission; abundant in dairy products, tofu, and some vegetables like broccoli.
- **Magnesium:** Involved in over 300 enzymatic reactions, contributes to muscle relaxation and heart rhythm regulation. Rich sources include almonds, spinach, and pumpkin seeds.
- **Zinc:** Crucial for wound healing and immune function, found in meat, seafood, and whole grains.

Dietary Fiber: More Than Just Digestion

Not all fibers are the same. They are divided into:

- **Soluble Fiber:** Dissolves in water, forming a gel that slows sugar and fat absorption. Sources: oats, apples, citrus fruits.
- **Insoluble Fiber:** Increases stool bulk and speeds up intestinal transit. Sources: whole grains, nuts.

Notable fibers include:

- **Pectin and Beta-Glucans:** Help lower cholesterol and blood sugar levels.
- **Inulin:** Supports gut microbiota.
- **Lignin:** Improves bowel regularity.

A healthy microbiota produces short-chain fatty acids with anti-inflammatory effects, improving insulin sensitivity and overall health. Recent studies show that gut bacteria ferment soluble fibers, such as inulin and beta-glucans, producing butyrate, acetate, and propionate. These compounds play a key role in strengthening the intestinal barrier, reducing systemic inflammation, and modulating energy metabolism. Additionally, a fiber-rich diet increases microbiota diversity, an important indicator of gut health. Although insoluble fiber is less fermentable, it contributes to creating an environment favorable for the growth of beneficial bacteria, promoting a balanced ecosystem. The combined effects of soluble and insoluble fibers result in better digestion, a reduced risk of gastrointestinal disorders, and improved weight management.

Water: The Forgotten Nutrient

Water is a crucial element for survival. It makes up about 60% of body weight and regulates body temperature, transports nutrients, and facilitates toxin elimination. Even mild dehydration can impair cognitive and physical abilities. In addition to drinking water, foods like cucumbers, watermelons, and zucchini contribute significantly to hydration.



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Final Thought

Adopting a balanced approach to nutrition means providing the body with the necessary nutrients to function at its best. Remember, every meal is an opportunity to build a future of health and vitality.