

Nutrition // Lec. 4.. Proteins

Instructor:

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Definition:

- Proteins are large, complex molecules made up of amino acids.
- These amino acids are linked together by peptide bonds, forming long chains.
- Proteins play numerous critical roles in the body.
- Protein are very large organic compounds. Proteins, like carbohydrates and fats.

Importance:

- **Structural Support:** Proteins are essential components of tissues like muscles, skin, hair, and nails.
- **Enzymes:** They act as catalysts, accelerating chemical reactions in the body.
- **Hormones:** Many hormones, which regulate various bodily functions, are proteins.
- **Immune Function:** Antibodies, which defend against infections, are proteins.
- **Transport:** Proteins transport substances like oxygen (hemoglobin) and nutrients throughout the body.
- **Growth and Repair:** Proteins are vital for building and repairing tissues.

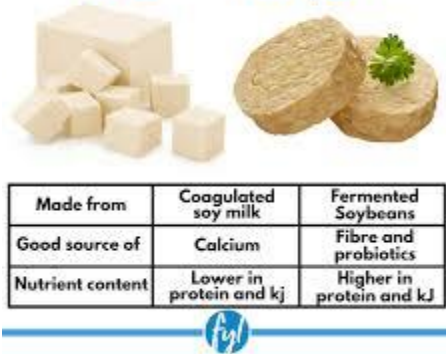
Sources:

- **Animal Sources:**
 - Meat (beef, poultry, fish)
 - Eggs
 - Dairy products (milk, cheese, yogurt)

- **Plant Sources:**

- Legumes بقوليات (beans, lentils, chickpeas)
- Nuts and seeds بذور
- Whole grains
- Soy products (tofu, tempeh)

What's the Difference: Tofu vs Tempeh



Classification:

- **Based on Composition:**

- **Simple proteins:** Contain only amino acids.
- **Conjugated مترافق proteins:** Contain amino acids and other components (e.g., lipoproteins, glycoproteins).

- **Based on Shape:**

- **Fibrous proteins:** Long, thread-like (e.g., collagen, keratin).
- **Globular كروي proteins:** Spherical (e.g., enzymes, antibodies).

- **Based on nutritional value:**

- **Complete proteins:** Contain all essential amino acids. Usually from animal sources.
- **Incomplete proteins:** Lack one or more essential amino acids. Usually from plant sources.

Food Rich in Protein:

- Lean meats (chicken breast, turkey breast)
- Fish (salmon, tuna)
- Eggs
- Greek yogurt
- Lentils عدس
- Chickpeas حمص

- Almonds لوز
- Peanut butter زبدة الفول السوداني

Daily Needs:

- The recommended daily allowance (RDA) of protein varies based on factors like age, sex, and activity level.
- A general guideline is 0.8 grams of protein per kilogram of body weight.
- Athletes and pregnant or breastfeeding women may require higher amounts.
- It is always best to consult with a doctor, or registered dietician for personalized dietary advice.

Calculating your daily requirement of protein: Multiply your IB wt. (kg) x 0.8gm/kg= gm of protein (RDA)

e.g. 63.5 kg x 0.8gm/kg = 50.8 gm prot. RDA

Disease associated with protein energy malnutrition

• **Protein Energy Malnutrition (PEM)** or Protein Calorie Malnutrition (PCM) is the name given to various degrees of nutritional disorders caused by inadequate quantities of protein and energy in the diet.

I-Kwashiorkor: “the sickness a child develops when another baby is born”, in the language spoken in Ghana. Kwashiorkor occurs when there is not enough protein in the diet but calories or energy in the form of carbohydrates is available in sufficient quantity.

II-Marasmus: a condition occurs in children when both protein and energy are insufficient, over prolonged periods. In nutritional marasmus, there is also growth failure so that there is stunted growth.