

WISHH

World Initiative for Soy in Human Health

Enhancing human well-being through soy

Nutrition 101: Protein



Objectives

- Protein through life cycle
- Role of protein to prevent and/or treat malnutrition
- Protein requirements in infectious disease



Lifecycle Nutrition

- General protein requirements
 - Based on high-quality protein sources
 - Lower quality protein sources may increase general protein needs



Lifecycle Nutrition

- Pregnancy
 - Growth/development of fetus and other tissues
 - Storage of nitrogen increases: During third trimester protein requirements increase approximately 11 grams/day
- Lactation
 - Additional 15 grams/day



Lifecycle Nutrition

- Infancy/Childhood/Adolescence
 - Growth
 - Body content starts at ~11% and grows to 15% during first year: 3-3.5 grams per day
 - 1.5 to 1.75 g/kg/day during first year
 - Eventually drops to reflect less growth, more maintenance



Lifecycle Nutrition

- Elderly
 - Balances change-requirements are the same
 - Utilization may be less efficient
 - Muscle protein may be diminished



Malnutrition

- Types
 - Undernutrition
 - Starting out well → staying well
 - Especially essential for growth and catch-up growth periods
 - Overnutrition
 - The quick hop to obesity can be changed



Malnutrition

- Calories vs. protein: an old debate
 - Both are needed in appropriate proportions
 - Growth and maintenance levels should be covered
- Protein can be double-edged
 - Too much or too little carries consequences



Disease

- Disease and injury change protein metabolism and requirements
 - Increased protein needs during acceleration of losses (fever, diarrhea)
 - Increased protein turnover in acute and chronic infection
 - Changes in protein maintenance regulators



Disease

- What happens that affects protein
 - Increased breakdown of body proteins
 - Increases the amino acids available to make proteins that assist in defense and healing
 - Decreases appetite, which can impair protein intake
 - If gastrointestinal involvement: rapid acceleration of gut tissue turnover and malabsorption



Disease

- Increasing calorie recommendations automatically increases protein estimate
- Efforts to blunt acute malnutrition process of disease and injury requires adequate quality proteins/amino acids
- Recovery is a + nitrogen balance



Summary

- **Protein needs vary**
 - according to lifecycle, existence of malnutrition, and presence of infection/injury
- **Protein undernutrition**
 - leads to stunting, wasting, poor mental capacity, and loss of body functions
- **Protein rehabilitation are tailored to needs**

