

# **BIOCHEMISTRY OF NUTRITION**

## **Basics of „food science“**

- essence and goal of optimal, balanced diet
- components of our food (nutrients, alimentary fibers, bioactive compounds, additives)
- classification of nutrients

## **Proteins**

- importance of food proteins
- average daily protein demand, its caloric ratio in the diet/food, states with increased protein requirement, „protein sparing“
- significance of essential amino acids in the diet; limiting amino acid
- quality of food protein (foods with high or low biological value)
- full-value vegetarian and vegan diet (completing – complementation)
- ❖ protein-poor nutrition (main features of marasmus senilis and symptoms of kwashiorkor)
- ❖ protein-enriched nutrition
- advised protein sources, vitamin intake (B6)

## **Carbohydrates**

- importance of food carbohydrates
- minimal carbohydrate demand, its caloric ratio in the diet/food
- ❖ carbohydrate-poor nutrition (glucagon predominance, metabolic changes, ketosis)
- ❖ carbohydrate-enriched nutrition (consequences of insulin predominance, fast rise in blood glucose - hyperinsulinemia - obesity)
- recommended carbohydrate intake (complex carbohydrates); disadvantages of simple sugar intake; vitamin intake (B1)

## **Lipids**

- importance of food lipids
- caloric ratio of lipids in the diet/food; intake of essential fatty acids
- ❖ lipid-poor nutrition (in the background: generally digestive problems) and its consequence (absence of fat-soluble vitamins; absence of EPA and DHA)
- ❖ lipid-enriched nutrition and its consequences; fatty acids increasing or decreasing the blood cholesterol level
- features of advised lipid intake, appropriate lipid sources; vitamin intake (E), importance of carnitine

## **Micronutrients**

- general importance, conditions affecting vitamin requirement
- functional classification of vitamins and vitamin-like substances (coenzymes, antioxidants, ones with other functions) and examples for natural sources
- importance of vitamins with coenzyme functions in the metabolism (vitamin – coenzyme form – example for a reaction)
- classification of minerals according to requirement; examples for natural sources
- examples for functions for microminerals and for trace elements

## **Alimentary fibers**

- general daily requirement and average daily intake
- classification of dietary fibers, main types and their chemical nature
- characteristic effects of alimentary fibers and their significance in the prevention of certain diseases
- ❖ consequences of fiber-poor nutrition – increased risk for certain diseases
- ❖ disadvantages of fiber-enriched nutrition