The Hebrew University of Jerusalem

Syllabus

VITAMINS AND MINERALS - SELECTED TOPICS - 73967

Last update 13-09-2023

HU Credits: 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Nutritional Sciences - International Prog.

Academic year: 0

Semester: 2nd Semester

Teaching Languages: English

Campus: Rehovot

Course/Module Coordinator: Dr. Anna Aronis

Coordinator Email: anna.aronis@gmail.com

Coordinator Office Hours: By appointment

Teaching Staff:

Dr. Anna Aronis

Course/Module description:

The understanding of role of vitamins and minerals in nutrition and medical science is permanently growing. Assessment of nutritional status, whether at the individual level or at the level of population, is impossible without understanding functions of micronutrients. The research of classical deficiency diseases has been expanded with subclinical conditions threatening public health.

Course/Module aims:

This course is going to enlighten physiological, nutritional and molecular aspects of micronutrient metabolism, nutritional sources, methods of assessment of nutritional status and clinical and subclinical symptoms of deficiencies.

Learning outcomes - On successful completion of this module, students should be able to:

Describe the molecular and physiological mechanisms of micronutrient-induced processes at the level of cells and organism. Identify of signs of micronutrients, deficiencies and toxicity, and Define recommendations regarding micronutrients.

Attendance requirements(%):

100

Teaching arrangement and method of instruction: Lectures

Course/Module Content:

1.Introduction to vitamins and minerals.
2. Vitamin A. Retinoids and carotenoids. Nutritional sources, DRI recommendations. Molecular effects, nuclear receptors' role in gene regulation.
3. Calcium. Role in human nutrition, DRI recommendations, nutritional sources. Regulation of calcium levels in blood. Interactions with vitamin D.
4. Vitamin D. Role in human nutrition, DRI recommendations, nutritional sources. Genomic and non-genomic modes of action of vitamin D. Nuclear receptor of vitamin D.
5.Iron. Nutritional sources, role in human physiology, recommendations. Cellular uptake, iron transporters and carriers.
6. Vitamin C. Nutrition, physiology, recommendations. Antioxidant vitamins. Role of vitamin C in disease prevention.
7. Iodine. Recommendation, nutritional sources. Iodine deficiency disorders. Role of thyroid hormones in development and health. Mechanisms of cellular iodine uptake

in stomach and thyroid.
8. copper. The role of copper in physiology and human nutrition. Nutritional sources. Cellular metabolism. Copper and iron activity in the human body.
9. B group vitamins, role in human nutrition, recommendation, physiology and biochemistry:
a) Thiamine.
b) Riboflavin.
c) Niacine.
d) B6 vitamin.
e) B12 vutamin
f) Folic acid
g) Interactions between B group vitamins.
10.Course summary and conclusions.

Required Reading:

1)Combs GF. The vitamins. 4-rd ed. Academic press, 2012.
2)World Health Organization. Vitamin and mineral requirements in human nutrition. WHO and FAO, 2-nd ed., 2004.
3)Stryer L, Berg M, Tymoczko JL. Biochemistry.7-th ed. New York

Additional Reading Material:

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Grading Scheme:

Written / Oral / Practical Exam 50 %
Presentation / Poster Presentation / Lecture/ Seminar / Pro-seminar / Research proposal 50 %

Additional information:

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