

EXAM

Wednesday, January 22, 2025 10:43 AM

HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOTECHNOLOGY AND FOOD TECHNOLOGY
DEPARTMENT OF FOOD TECHNOLOGY

FINAL EXAM

(Test time: 60 min.)

Course: Nutrition

Course ID: BF351AE

School year: 2021-2022

Term: 1

Materials are NOT allowed:

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Q1 (3 marks). Explain (in brief) why in the National Strategy on Nutrition for the period of 2021-2030 and vision to 2045, it is required to promote the fortification of micronutrients in food and is mandatory for products: cooking oils fortified with vitamin A, flour fortified with iron and zinc, salt fortified with iodine?

Q2 (7 marks). Prepare your daily meal (for one day) based on three basic principles (meeting energy requirement, nutrient requirement and balanced diet). Your meal consists white rice, pork (medium fat), beef (grade 1), tofu, soybean oil and broccoli (green cauliflower). The nutritional value of these foods is taken from Vietnamese Food composition table.

Qd:

- Subject: Female student, weigh 56 kg. Do exercise regularly (3 hours table tennis each day for 4 days/week) (1)

- Calculate TEE:

$$+ \text{BMR} : 0,9 \cdot 56 \cdot 24 = 1210 \text{ kcal}$$

$$+ \text{TEF} : 0,1 \text{ BMR} = 121 \text{ kcal}$$

$$+ \text{PA} : 0,4 \text{ BMR} = 484 \text{ kcal}$$

$$+ \text{others} : 0$$

$$\Rightarrow \text{TEE} = \text{BMR} + \text{TEF} + \text{PA} + \text{others}$$

$$= 1210 + 121 + 484 + 0$$

$$= 1815 \text{ kcal/day}$$

- We have:

$$+ \text{Protein} : 1,15 \cdot 56 = 64,4 \text{ g/day}$$

$$+ \text{Lipid} : 50 \text{ g/day}$$

$$+ \text{Carbs} :$$

$$\text{We calculate: P/L/C} = 15/20/65 = 273 \text{ kcal} / 363 \text{ kcal} / 1180 \text{ kcal}$$

$$\Rightarrow m_{P/L/C} = 68,25 \text{ g} / 40,33 \text{ g} / 295 \text{ g}$$

$$+ \text{Protein} : 68,25 \text{ g} \Rightarrow \text{animal} = \text{vegetable} = 34,125 \text{ g}$$

$$+ \text{Lipid} : 40,33 \text{ g} \Rightarrow 30\% \text{ from vegetable oil} = 12,1 \text{ g}$$

$$+ \text{Carbohydrate} : 295 \text{ g}$$

In 100g	Protein	Lipid	Carb
a : White rice	7,9	1,0	75,9
b : Pork (medium fat)	16,5	21,5	0,0
c : Beef (grade 1)	21,0	3,8	0,0
x : Tofu	10,9	5,4	0,7
y : Soybean oil	0,0	100,0	0,0

Because broccoli contain mostly fiber \Rightarrow we can neglect it as long as we eat enough 300g of fiber/day

$$\Rightarrow \text{Protein: Animal: } \frac{1}{100} (16,5b + 21c) = 34,125$$

$$\text{Org: } \frac{1}{100} (7,9a + 10,9x) = 34,125$$

$$\text{Lipid: Veg oil: } \frac{1}{100} (100y) = 12,1$$

$$\text{Others: } \frac{1}{100} (1a + 21,5b + 3,8c + 5,4x) = 40,33 - 12,1$$

$$\text{Carbs: } \frac{1}{100} (75,9a + 0,7x) = 295$$

$$\Rightarrow \begin{cases} 16,5b + 21c = 34,125 \\ 7,9a + 10,9x = 34,125 \\ y = 12,1 \\ a + 21,5b + 3,8c + 5,4x = 28,23 \\ 75,9a + 0,7x = 29500 \end{cases}$$

$$\Rightarrow \begin{cases} a = 388,38 \text{ (g)} \\ b = 12,16 \text{ (g)} \\ c = 152,95 \text{ (g)} \\ x = 31,59 \text{ (g)} \\ y = 12,1 \text{ (g)} \end{cases}$$

\Rightarrow For one day, T (Female, 56 kg, student, regularly do exercises) eat

388,38 g white rice
12,16 g pork (medium fat)
152,95 g beef (grade I)
31,59 g tofu
12,1 g soybean oil
300 g broccoli

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12,1 g soybean oil
300 g broccoli

Q1:

In the National Nutrition Strategy for 2021-2030, the vision to 2045, promoting the fortification of micronutrients in food because:

- +> Deal with Micronutrient Deficiencies: Micronutrient deficiencies, especially vit A, iron, zinc & iodine, are widespread in Vietnam, especially in pregnant women, children & ethnic minorities. These deficiencies can lead to some diseases (anemia, immune dysfunction, ...)
- +> Cost-effective Public Health Interventions: Food fortification is a cost-effective method to deliver essential micronutrients on large scale without requiring major dietary changes (ex: salt with iodine)
- +> Support Vulnerable Populations: Fortified staple food ensure essential nutrients reach vulnerable consistently, hence improve their nutrition status since they often have limited access to diverse diets.
- +> Align with International Recommendations: The fortification of common consumed foods aligns with global health guidelines from organization such as WHO & UNICEF to tackle micronutrient deficiencies.

Q3: Compare National Nutrition Strategy period 2011-2020 & 2021-2030.

- Principle

	Similarities	Differences
2011-2020	<ul style="list-style-type: none"> +> All the levels of government & each citizen must take responsibility for improving nutrition in Vietnam +> In both period, remote & disadvantaged areas were given attention to improving nutritional quality 	<ul style="list-style-type: none"> +> Aim to improve Vietnamese people physical health, stature, & intellect +> Beside people who living in disadvantage, government also takes care of pregnant women & children +> Raised communication issues because the media at that time not yet developed +> Promote internationalization
2021-2030		<ul style="list-style-type: none"> +> Pay attention to the health & life quality of each person +> International exchange & propaganda about ensuring nutrition was significantly improved.

- General object.

	Similarities	Differences
2011-2020	<ul style="list-style-type: none"> +> Building a balanced nutritional diet to reduce disease & improving physical health, stature & intelligence, especially in children 	<ul style="list-style-type: none"> +> Primarily, focusing on improving nutritional for all Vietnamese people without going to specifics +> The issue of physical health had been promoted than prevented diseases.
2021-2030		<ul style="list-style-type: none"> +> Differentiation in developing nutritional regimes which suitable to each region, each age. +> Concentrating on preventing disease burden than improving physical health.