



Nutrition & Food Hygiene English

# 营养与食品卫生 英语教程

主 编 宋德富

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# 营养与食品卫生 英语教程

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## 内容提要

本教程根据我国高校营养与食品卫生专业教学大纲的要求, 选编了近年来国内外广泛认可的最新研究成果, 并少量涉及仍然存在争议的专题。其内容分为三大部分: 第一部分为宏量营养素, 包括碳水化合物、蛋白质和脂肪的基本概念、分类和对人体健康的影响; 第二部分主题为微量营养素之维生素和矿物质, 同时涉及膳食纤维和新陈代谢对健康的作用; 第三部分以膳食营养金字塔为切入点, 涉及特殊人群的营养以及食品卫生安全和生物分子营养学的内容。

本教程充分考虑到知识性、趣味性及专业深度的适度性, 适合作为高等院校营养与食品卫生、食品营养与安全及食品科学与工程等专业的专业英语教材, 也可作为相关院系基础营养双语教学的教材, 以及对营养学感兴趣的读者自学使用。

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主编 宋德富

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### ■ 内容介绍

本数字课程与《营养与食品卫生英语教程》纸质教材配套，主要内容包括营养与食品卫生英语构词法和长单词重音规则、营养与食品卫生专英语翻译技巧、主要参考网站、主课文参考译文、阅读材料参考译文、练习参考答案和 PPT 课件等内容。作为一个开放的网络教学平台，本数字课程资源是对主教材的有力补充和扩展，可供学有余力的学生学习和教师教学参考。

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# 前言

## 一、编写目的

本科大学英语经过两年时间完成了基础阶段的学习任务后进入了应用提高阶段，这个阶段包括专业英语和高级英语两个部分，前者为必修课，后者是选修课，通过四年持续的学习，真正实现《大学英语课程教学要求》中提出的具有与自己所学专业相衔接的听说读写译能力的更高要求。

之所以把专业英语确定为必修课，因为它是大学英语教学的重要组成部分，是学生完成从学习英语到使用英语转换的一个重要过程。随着我国高等教育师资水平的不断提高，各院校专业老师英语水平不断提升，为专业英语师资配备做好了准备，不但专业英语课程已经在很多高校的很多专业逐步开设，有条件的院校还分期分批地开设了双语教学课程。推行部分学科课程双语式教学是教育部为拓宽本科学生专业视野，促进学科与学术前沿融合，加快高等教育与国际接轨而采取的重要举措。这就为我们在专业英语和双语教学的教材、教学方法和测试手段等方面积累了一定的经验。

营养与食品卫生专业是一个世界通用性专业，我国未来的营养师们和从事食品工作的专业人才应该能够吸收整个人类的营养文化，也能够把我国的科学营养理念推荐给世界人民，即相互学习、相互促进，这样才能够保证我国的营养与食品卫生事业与世界同步，并争取在这个领域走在世界的前列，这就需要我国未来的营养师和食品专家们能够与时俱进，具备知识更新的能力，因此给营养与食品卫生专业的莘莘学子开设专业英语课或进行双语教学刻不容缓。《营养与食品卫生英语教程》就是为了满足不同类型的高等院校中营养与食品卫生专业开设专业英语或进行双语教学的需求而组织编写的。

## 二、内容简介

本教程根据我国卫生部规划的营养与食品卫生教学大纲，选编国外著名高等院校或科研机构广泛认可的最新研究成果，并少量涉及仍然存在争议的专题。其内容分为三大部分。第一部分为宏量营养素，包括了碳水化合物、蛋白质和脂肪的基本概念、分类和对人体健康的影响；第二部分主题为微量营养素之维生素和矿物质，同时涉及膳食纤维和新陈代谢对于健康的作用；第三部分以膳食营养金字塔为切入点，涉及特殊人群的营养以及食品卫生安全和生物分子营养学的内容。选材时充分考虑其知识性、趣味性以及专业深度的合适性。课文中涉及的营养学的著名科学家、重大事件和新的理念采用课文注释、短文练习和复习单元短文测试的方法予以解释补充，这就使整本教程变得具有系统性和逻辑性。

## 三、体例

本教程以单元为基本构件，每个单元包括主课文（Passage）和阅读材料（Passage for Reading），下设New Words, Special Terms, Abbreviations, Notes to the Passage, Exercises to the Passage, Exercise to the Passage for Reading。

新单词的界定主要参考教育部办公厅公布的《大学英语课程教学要求》附3:《大学英语参考词汇表》,同时把在基础英语中相对生僻,但在营养与食品卫生英语中却是常用的单词也列入其内。对新单词根据它们的使用频率标以分级记号,以便在教学过程中把握重点:\*为基础词汇(一般要求、较高要求和更高要求的词汇);\*\*为常用营养与食品卫生词汇;未标注的为不常用词汇(高级营养学或基础英语中更高要求的词汇)。Notes to the Passage重点解剖长句难句,提示翻译技巧,介绍背景知识,为学生课后自学提供方便。练习的设计除了主课文和阅读材料的理解外,重点放在营养与食品卫生术语的反复练习上。对使用频率较高的动词也安排了足够的练习。

书后附有总词汇表,收纳了主课文和阅读材料中的新单词。

#### 四、适用对象

本教程主要适用于医学院校营养与食品卫生专业,农林院校和工科院校中食品营养与安全专业。由于本教程的选材不涉及高级营养学的内容,并把在基础英语中相对生僻,但在营养与食品卫生专业英语中却是常用的单词也作为新词处理,因此所有层次的本科院校、部分专科层次的营养专业的学生都可以将其作为专业英语或双语教学的教材使用。社会上对营养学抱有浓厚兴趣的各类人员也可以将其用做自学教材。

#### 五、使用建议

根据大学英语学习“不断线”的原则,对于一般院校,本教程可以安排在基础英语教学完成后的三个学期内完成,每学期学习五个单元,外加一个复习单元。每周2课时,每个单元教学时间为6学时,每学期的总课时为32~34。每个单元主课文和阅读材料教学时间比可以是4:2。高水平院校可以在60~68课时内完成全部教学任务,阅读材料让学生借助附录中的总词汇表或软件工具进行自学,教师答疑并检查。如果开设课时不够,任课老师则可鼓励和指导学生充分利用计算机和网络中的各种学习工具自学某些单元。

#### 六、教辅材料

教辅材料包括营养与食品卫生英语构词法和长单词重音规则、营养与食品卫生英语翻译技巧、主要参考网站、主课文和阅读材料参考译文、练习参考答案和PPT课件等内容,请访问该书的数字课程网站<http://res.hep.com.cn/33839>获取相关教辅资料。也可以直接与作者通过电子邮件进行互动。宋德富教授的email地址为sdfzml@vip.sina.com。

#### 七、致谢

本教程在编写启动之前发信至全国100余所高校进行选题调研,很多学校的营养专业教研室主任积极配合,及时反馈;本书的编委们克服教学科研任务繁重的困难,夜以继日潜心工作;美国西雅图的Petersons夫妇迅捷回答我们提出的一些难题;等等;在这里我们对他们一并表示衷心的感谢!

编者

2011年8月

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# Unit 1

## Passage

### Food Basics: Nutritional Elements of Food

#### *Introduction*

Food, clothing and shelter form the basic needs of man. The nutritional elements of food, which are essential for all the life processes, make food one of our basic needs.<sup>[1]</sup><sup>①</sup> This is why “food” comes first in the basic necessities of man! When we talk of food basics, we intend to express the body’s requirement of food. Let us look at the nutritional elements of food and the roles they play in maintaining the metabolism!

Carbohydrates, fats, vitamins, minerals, proteins, fiber and water constitute the basic nutritional elements of food. They are categorized based on the amounts in which the body requires them.<sup>[2]</sup> The nutrients required in relatively larger amounts by the body are classified as macronutrients. Carbohydrates, fats, proteins, water and fiber belong to this class of nutrients. Vitamins and minerals are required in comparatively smaller amounts and hence called micronutrients.

#### *Nutritional Elements of Food*

Carbohydrates, fats and proteins are the sources of energy. Carbohydrates give four calories of energy per gram while one gram of fat gives nine calories of energy. Molecules of carbohydrates and fats are composed of carbon, hydrogen and oxygen atoms. Proteins additionally contain nitrogen atoms. Foods contain some or all of the nutrients in certain proportions. It is these nutritional elements of food that help maintain metabolism of the body and keep us healthy. Let us look at each of them in detail.

##### *Carbohydrates*

Based on the number of sugar units they contain, carbohydrates

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① 凭方框码可在Notes to the Passage中查找到对该句的剖析。

are classified as monosaccharides, disaccharides, or polysaccharides. They contain 1, 2 and 3 or more sugar units respectively. Carbohydrates require less water to digest and make up the most common source of energy. As the body can obtain energy from proteins and fats, they are not the essential nutrients. Carbohydrate-rich foodstuffs include bread, pastas, rice and beans.

### *Fats*

They contain fatty acids and glycerol. If a molecule of fat has all its carbon atoms bonded to hydrogen atoms, it is known as a saturated fat. In case, some of its carbon atoms are doubly bonded to each other, it is an unsaturated fat. <sup>[3]</sup> Saturated fats are solids while unsaturated fats are liquids. Fats disintegrate forming fatty acids and glycerol. <sup>[4]</sup> Fatty acids are an essential dietary need while glycerol is used to produce glucose. This makes fats the energy stores of our body. Apart from this, they act as a buffer for diseases, they maintain body temperature and assist the functioning of cells. <sup>[5]</sup> Fats act as solvents for vitamins A, D, E and K. Body can absorb these vitamins only with the help of fats. Nuts, oil and butter contain fats. Fats are also responsible for healthy skin and hair.

### *Vitamins*

Vitamins work like hormones. They regulate cell and tissue growth. They are vital nutrients. Each of the vitamins if consumed in amounts less than those required by the body, leads to a deficiency disease. <sup>[6]</sup> This makes evident their importance to the body. <sup>[7]</sup>

- Vitamin A, known as retinal, plays a major role in eyesight. Its deficiency leads to night-blindness. Sources of this vitamin include carrots and cod liver oil.
- Vitamin B comes in different forms such as B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>5</sub>, B<sub>6</sub>, B<sub>7</sub>, B<sub>9</sub> and B<sub>12</sub>. Rice bran is a major source of vitamin B<sub>1</sub> while B<sub>2</sub> is found in eggs. Liver provides other forms of this vitamin. B<sub>6</sub> plays a role in protein metabolism and formation. It is necessary for the development of a healthy immune system. It plays a crucial role in fertility. Vitamin B<sub>12</sub> is important for proper functioning of the nervous tissue. B<sub>1</sub> with the chemical name thiamine is responsible for neural function and carbohydrate metabolism. It is necessary for healthy mucus membranes. B<sub>2</sub> is instrumental in the maintenance of normal vision and healthy skin. It is a coenzyme used in metabolism of energy. Deficiencies of vitamins B<sub>6</sub> and B<sub>12</sub> may lead to Anemia. Deficiency of B<sub>9</sub> in pregnant women leads to birth defects in children.
- Vitamin C is an antioxidant. It helps maintain healthy gums and teeth. It increases absorption of iron by the body and helps fight infections. Citrus fruits, cabbage, pineapples and broccoli are rich sources of vitamin C.
- Sunlight is the richest source of vitamin D. Cheese, liver and salmon are others. This vitamin helps in the absorption of calcium and phosphate and plays a vital role in the health of bones and teeth.
- Functions of vitamins are so much inter-related. Vitamin E helps prevent destruction of vitamins A and C. Wheat germ and green leafy vegetables are rich in vitamin E.
- The synthesis of proteins in plasma, bones and kidneys is brought about by vitamin K. It is also necessary for normal clotting of blood. Spinach, lettuce, cabbage and cauliflower are sources of vitamin K.

### *Minerals*

Oyster shell is a natural source of minerals. Iodized salt is an example of a mineral added as a

supplement. Calcium, magnesium and phosphorous, helpful in the growth and health of bones are a few of the essential minerals. Sodium, potassium, iodine as also iron and zinc are other useful dietary minerals.

### Proteins

Proteins are often known as the building blocks of the body. The amino acids that they contain form the structural elements of the body. Proteins are particularly needed during the growth period of any animal. Meat, grains, eggs and milk are rich in protein.

### Fiber

The indigestible portion of plant food constitutes dietary fibers. They ease the defecation process. They provide the body with the very necessary roughage, which plays a major role in the process of digestion. Whole grain food, bran and celery are fiber-rich.

### Water

We all know that 70% of the human body is water. This fact is sufficient to illustrate the importance of water as a basic nutrient. Human body needs around 1-7 liters of water everyday. Need of water depends on the physical activity of every individual. Water prevents the dehydration of the body.

Nutrition is a science. It is a key to maintain an optimal state of health. We don't 'live to eat' but we definitely 'eat to live'. Right food consumed in right quantities helps us lead a healthy and a happy life.

## New Words

- \*\* amino [ə'mi:nəu] *adj.* 氨基的
- \*\* anemia [ə'ni:mia] *n.* 贫血症
- \*\* antioxidant [ænt'rɒksɪdənt] *n.* 抗氧化剂, 硬化防  
止剂
- \* bond *vt.* 使凝固, 使黏结, 使结合  
*n.* 联系, 接合, 黏结剂
- \*\* bran [bræn] *n.* 糠
- \*\* broccoli ['brɒkəli] *n.* 花椰菜, 花茎甘蓝; 西兰花
- \*\* calcium ['kælsiəm] *n.* 钙
- \*\* calorie/calorie ['kæləri] *n.* (小) 卡路里
- \*\* carbohydrate [kɑ:bəu'haɪdrɪt] *n.* 碳水化合物,  
糖类; 淀粉质食物
- \*\* carrot ['kærət] *n.* 胡萝卜
- \*\* cauliflower ['kɒlɪflaʊə] *n.* 花椰菜, 菜花
- \*\* celery [sɪ'ləri] *n.* 芹菜
- citrus ['sɪtrəs] *n.* 柑橘属
- \*\* clotting *n.* 凝固, 结块
- \* cod *n.* 鳕鱼肉, 鳕鱼
- \*\* coenzyme [kəu'enzam] *n.* 辅酶
- \* constitute ['kɒnstɪtju:t] *vt.* 构成, 组成
- \*\* defecation [defɪ'keɪʃən] *n.* 通便, 排便
- \* deficiency [dɪ'fɪʃənsɪ] *n.* 缺乏, 不足, 短缺
- \*\* dehydration [dɪ'haɪd'reɪʃən] *n.* 脱水; 干燥, 极  
度口渴
- \*\* disaccharide [daɪ'sækəraɪd] *n.* 二糖
- \* disintegrate [dɪs'ɪntɪɡreɪt] *vt. & vi.* (使)破裂/分  
裂, 粉碎; (使)崩溃
- \* doubly ['dʌbli] *adv.* 加倍地, 双倍地
- \*\* enzyme ['enzam] *n.* 酶
- \* fertility [fə'tɪləti] *n.* 肥沃, 繁殖力
- \*\* fiber ['faɪbə] *n.* 纤维物质, 纤维质料; 光纤
- \*\* glucose ['glu:kəʊs] *n.* 葡萄糖, 右旋糖
- \*\* glycerol ['glɪsərəʊl] *n.* 甘油, 丙三醇
- \* gum [ɡʌm] *n.* 牙龈; 口香糖; 树脂, 胶水
- \*\* hormone ['hɔ:məʊn] *n.* (刺激生长的) 荷尔蒙,  
激素
- \*\* immune [ɪ'mju:n] *adj.* 免疫的, 有免疫力的; 不  
受影响的
- \*\* indigestible [ɪndɪ'dʒestəbl] *adj.* 难消化的, 无法  
消化的
- \*\* iodine ['aɪədi:n] *n.* 碘
- \*\* iodize/iodise ['aɪədaɪz] *vt.* 用碘处理, 使碘化
- \*\* kidney ['kɪdnɪ] *n.* 肾, 肾脏
- \*\* lettuce ['letɪs] *n.* 莴苣, 生菜

- \*\*liver ['lɪvə] *n.* 肝脏  
 \*\*macronutrient [ˌmækrəʊ'nju:triənt] *n.* 宏量营养素, 常量营养素  
 \*\*magnesium [mæg'ni:ziəm] *n.* 镁 (金属元素)  
 membrane ['membrem] *n.* 薄膜, 隔膜  
 \*\*metabolism [mɪ'tæbəlaɪzəm] *n.* 新陈代谢  
 \*\*micronutrient [ˌmaɪkrəʊ'nju:triənt] *n.* 微量营养素  
 \*\*mineral ['mɪnərəl] *n.* 矿物; 矿石; 矿物质; 汽水  
*adj.* 矿物的, 似矿物的  
 \*\*molecule ['mɒlɪkjʊ:l] *n.* 分子  
 \*\*monosaccharide [ˌmɒnəʊ'sækəraɪd] *n.* 单糖  
 mucus ['mjʊkəs] *n.* (由黏膜分泌出的) 黏液  
 \*\*nitrogen ['naɪtrədʒən] *n.* 氮  
 \*\*nutrient ['nju:triənt] *n.* 营养素, 营养物  
*adj.* 营养物的, 营养品的  
 \*\*nutrition [nju:'trɪʃən] *n.* 营养, 营养学  
 \*\*nutritional [nju:'trɪʃənəl] *adj.* 营养的, 滋养的;  
 营养品的  
 \*\*oyster ['ɔɪstə] *n.* 牡蛎, 蚝  
 \*\*pasta ['pæstə] *n.* 面团, 意大利面食  
 \*\*phosphate ['fɒsfert] *n.* 磷酸盐  
 \*\*phosphorous ['fɒsfərəs] *adj. & n.* 磷 (的)  
 \*\*plasma ['plæzmə] *n.* 血浆

- \*\*polysaccharide [ˌpɒlɪ'sækəraɪd] *n.* 多糖, 聚糖, 多聚糖  
 \*\*potassium [pə'tæsiəm] *n.* 钾  
 \*\*pregnant ['pregnənt] *adj.* 怀孕的, 怀胎的  
 \*\*protein ['prəʊtɪn] *n.* 蛋白质  
 \*\*retinal ['retɪnəl] *adj.* 视网膜的  
*n.* 视网膜  
 \*\*roughage ['rʌfɪdʒ] *n.* 粗粮, 粗饲料  
 \*\*salmon ['sæmən] *n.* 鲑鱼, 大马哈鱼, 三文鱼  
 \*\*saturate ['sætʃəreɪt] *vt.* 浸湿, 浸透; 使饱和/中和  
 \*\*sodium ['səʊdiəm] *n.* 钠  
 \*\*solvent ['sɒlvənt] *n.* 溶剂  
*adj.* 有溶解能力的  
 \*\*supplement ['sʌplɪmənt] *n.* 增补物, 补充物  
*vt.* 增补, 补充  
 \*\*synthesis ['sɪnθɪsɪs] *n.* 合成; 综合, 综合法  
 thiamine ['θaɪəmi:n] *n.* 硫胺 (维生素B<sub>1</sub>)  
 \*\*tissue ['tɪʃu:, 'tɪsju:] *n.* (动植物的) 组织; 棉  
 纸, 餐巾纸  
 \*\*unsaturated [ˌʌn'sætʃəreɪtɪd] *adj.* 没有饱和的,  
 不饱和的  
 \*\*vitamin ['vɪtəmi:n, 'vaɪtəmi:n] *n.* 维生素  
 \*\*zinc [zɪŋk] *n.* 锌

注: \*为基础词汇, \*\*为常用食品营养专业词汇, 未标注的为不常用的基础词汇, 以下各单元相同。

### Special Terms

amino acids 氨基酸

carbohydrate metabolism 碳水化合物代谢

citrus fruits 柑橘类水果

defecation process 排便过程

deficiency disease 营养缺乏症

dietary minerals 食用矿物质

fatty acid 脂肪酸

immune system 免疫系统

iodized salt 加碘盐

liver oil 肝油

mucus membranes 黏液膜

nervous tissue 神经组织

neural function 神经系统作用

night-blindness 夜盲症

nutritional elements 营养素

oyster shell 牡蛎壳

protein formation 蛋白质形成

protein metabolism 蛋白质代谢

rice bran 米糠, 麸皮

saturated fat 饱和脂肪

sugar unit 糖单位

unsaturated fat 不饱和脂肪

wheat germ 麦芽

## Notes to the Passage

- 【1】The nutritional elements of food, which are essential for all the life processes, make food one of our basic needs.

主语 The nutritional elements of food 与谓语 make food one of our basic needs 之间插入了一个非限制性定语从句 which are essential for all the life processes 造成了主谓分割。谓语部分的 make 是使动词，one of our basic needs 是宾语 food 的补足语，即名词充当宾补。定语从句跟整个句子是因果逻辑关系，因此全句的通顺译文可以是：“由于食品的营养素是所有生命过程的必需品，因此食品变成了我们最为基本的需求之一。”

- 【2】They are categorized based on the amounts in which the body requires them.

本句讲基本营养素分类的依据是人体对它们的需求量，下文的说法是：The body requires some nutrients in relatively larger amounts and the other ones in comparatively smaller amounts，因此定语从句中出现了 in which。

- 【3】In case, some of its carbon atoms are doubly bonded to each other, it is an unsaturated fat.

所谓 carbon atoms are doubly bonded to each other，就是  $\text{—C=C—}$  双键，因此中文里可以说成“不含有  $\text{—C=C—}$  双键的脂肪酸为饱和脂肪酸；至少含有一个  $\text{—C=C—}$  双键的脂肪酸为不饱和脂肪酸”。

- 【4】Fats disintegrate forming fatty acids and glycerol.

forming fatty acids and glycerol 是表示伴随情况的状语，即“脂肪分裂时产生了脂肪酸和甘油”。

- 【5】Apart from this, they act as a buffer for diseases, they maintain body temperature and assist the functioning of cells.

这句继续前面接着讲脂肪的作用，主语 they 就是脂肪。Apart from this, they act as a buffer for diseases 中，this 一定是下指，即 they act as a buffer for diseases “脂肪的功能是对疾病产生缓冲作用”，然后再说“除了这个缓冲作用外，它们还能够维持体温，帮助细胞执行其功能”。

- 【6】Each of the vitamins if consumed in amounts less than those required by the body, leads to a deficiency disease.

主语 Each of the vitamins 后面跟了个 if 条件从句把其与谓语部分 leads to a deficiency disease 分割了。if 条件从句是一个省略句，说全了应该是 if it is consumed in amounts less than those required by the body。全句的译文可以是：“人体对任何一种维生素都有一个量的需求，少了就会导致某种营养缺乏症。”

- 【7】This makes evident their importance to the body.

这是一个主动宾补结构的句子，但宾语和宾补的顺序颠倒了。主语是 this，使动词为 makes，宾语是 their importance to the body，宾补是形容词 evident。全句译文：“这充分显示了维生素对于人体的重要性。”

## Comprehension Exercises to the Passage

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[Ex.1] Decide whether the following statements are true(T) or false(F) in relation to the information in the passage.

### **Introduction**

1. Food, clothing and shelter form the basic needs of man, among which food comes first, indicating the nutritional elements of food are most important for all the life processes.
2. Macronutrients are more important than micronutrients.
3. Vitamins and minerals belong to micronutrients because they are required in comparatively smaller amounts.
4. The body requires large amount of minerals so we should eat food containing a lot of them.

### **Nutritional Elements of Food**

5. Molecules of carbohydrates, fats and proteins are all composed of carbon, hydrogen and oxygen atoms.
6. In addition to carbon, hydrogen and oxygen atoms, proteins contain nitrogen ones.
7. Foods contain all of the nutrients in certain proportions.

### **Carbohydrates**

8. The monosaccharide contains one sugar unit and the polysaccharide contains three sugar units.
9. The most common source of energy comes from carbohydrates.
10. Carbohydrates are the essential nutrients of the body.

### **Fats**

11. Fats are classified as a saturated fat and an unsaturated fat and the former is solid and the latter is liquid.
12. Most of unsaturated fats are vegetable oils.
13. The less the fatty acid you eat, the better your health is.
14. Without glycerol, the fats cannot be turned into glucose.
15. The only role fats can play is a buffer for diseases.
16. Without fats the body would not be able to absorb all vitamins.
17. In order to have healthy hair, one should consume an appropriate amount of fats.

### **Vitamins**

18. Lack of any one of the vitamins would lead to a deficiency disease.
19. Night-blindness is caused by deficiency of vitamin A.
20. The forms of vitamin B are from B1 to B12.
21. In the sentence "Liver provides other forms of this vitamin", "this vitamin" refers to vitamin B.
22. The main content of the paragraph "Vitamin B" is its sources.
23. Vitamin C plays an important role in maintaining healthy gums and teeth.
24. All forms of vitamins come from foodstuffs.
25. Vitamin K plays a role in the clotting of blood and the synthesis of proteins in plasma, bones and kidneys as well.