中等专业学校轻工专业试用教材

食品专业英语选读

江云生　主编

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内 容 提 要

本书取材于国外食品工业书刊英文原著。内容包括食品微生物、食品化学、食品分析、食品加工(加热、冷冻、干燥)、果蔬产品、焙烤制品、乳制品、饮料、糖果、肉类产品、食品配方及食品营养与卫生等14个课题,共28篇课文。每篇课文后附一篇阅读材料供学生课外阅读。书中词汇量丰富,对课文中疑难句、长句作了注释。书末附食品工业主要英文期刊名称和本书词汇表。

本书不仅可作中专食品工艺专业教材,而且可作粮食加工、农产品加工、食品化学和食品机械等专业教学用书,还可供食品工程技术人员学习使用。

尊敬的读者:

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前　言

本书是根据原轻工业部中等专业学校“八·五”教材建设计划，并经全国轻工业中等专业学校食品工艺专业教材委员会第一次会议审定的《食品专业英语选读》教学大纲进行编写的，可作为四年制中专食品工艺专业教材，也可作粮食加工、农产品加工、食品化学、食品机械等专业的专业英语教材，还可供食品工程技术人员提高英语水平学习使用。

本书选材全部来源于英文书刊。全书共分28课，内容包括食品微生物、食品化学、食品分析、食品工艺、食品营养与卫生等。在每课课文后列出部分词汇和词组的中英文对照，并对课文中的疑难句、长句等作了注释。每课课文后还选编了一篇阅读材料，供学生课外阅读，以进一步提高学生的英语熟练程度。书后附有食品工业主要英文期刊名称和本书词汇表。

本书由江西省轻工业学校温德云编写1～4课和25～28课，广东省轻工业学校江云生编写5～12课和食品工业主要英文期刊简介，山西省轻工业学校赵波编写13～18课，轻工业部广州轻工业学校莫慧平编写19～24课。由温德云整理词汇表。主编江云生，副主编温德云。全书由江西大学蔡珪教授主审。

在本书编写过程中，得到原轻工业部教育司教材处和各编者所在轻工业学校领导的支持。蔡珪教授对本书作了全面的审阅，并提出了宝贵的意见，在此谨表示衷心的感谢。

由于编者水平有限，书中难免存在缺点和错误，敬请批评指正。

编　者

1993年1月

Contents

LESSON ONE

TEXT

ENZYMES AND FOOD SPOILAGE

All foods are derived from living cells, which produce enzymes, and contain microorganisms, which are a good source of enzymes, Deterioration of food does not take place in normal healthy tissue. However, when injury occurs or the tissues reach maturity, the enzymes may start a series of biochemical changes, many of which are undesirable and bring about spoilage.

For example, meat is stored in a nonliving state in which the respiratory enzymes cease to funtion, but others carry on and induce undesirable changes in the meat. Microoganisms also play an important role in the spoilage. Low temperatures and carbon dioxide are employed to create an unfavorable environment for microorganisms and enzymes.

Under practical storage temperatures, autolysis goes on at a very slow rate. Studies made by chemists in the U. S. Department of Agriculture have established that protein in Stored food products is broken down into simpler substances such as peptones, peptides, amino acids, and ammonia[1]. Phosphate, normally present in the tissues, is separated from organic compounds. Fats undergo hydrolysis with liberation of fatty acids. If these acids are numbers of the lower fatty acid series, offensive

odors are usually evident.

The blanching of vegetables before storage is necessary in order to inactivate enzymes. The chemical changes that take place in frozen vegetable are not very well understood.

Enzymes play a minor role in spoilage of canned foods because they are usually destroyed by heat treatment during processing. However, if enzymes in canned foods are not completely destroyed or inactivated, they may give rise to undesirable flavors, color, and texture, thus lowering the quality; transform starch to suger, which tends to increase toughness; and destroy ascorbic acid (vitamin C)[2].

In milk, the fat-water interface is the site of chemical reactions that lead to off-flavors. Certain forces at interfaces greatly accelerate such changes. Other "pro-oxygenic" factors that stimulate production of off-flavors are increased temperature, sunlight or ultraviolet light, and time (aging).

WORDS AND EXPRESSIONS

enzyme ['enzaim] *n.* 酶
spoilage ['spɔilidʒ] *n.* 损坏,腐败
(be) derive from 来源于,从…产生
microorganism [maikrə'ɔ:gənizm] *n.* 微生物
deterioration [di,tiəriə'reiʃən] *n.* 变质,退化
tissue ['tisju:] *n.* 组织,织物
maturity [mə'tjuəriti] *n.* (细胞)成熟,到期,壮年
undesirable ['ʌndi'zaiərəbl] *a.* 讨厌的,不合需要的
bring about 带来,造成
respiratory [ris'paiərətəri] *a.* 呼吸(作用)的
nonliving ['nɔn'liviŋ] *n.* 无生命的,非活性的

play (important) role 起(重要)作用
break down 破坏,分解(裂,类)
induce [in'dju:s] *vt.* 导致,引起,诱导
carbon ['ka:bən] *n.* 碳
dioxide [dai'ɔksaid] *n.* 二氧化物
unfavorable ['ʌn'feivərəbl] *a.* 不适宜的,相反的,令人不快的
autolysis ['ɔ:tɔlisis] *n.* (细胞的)自溶(作用)
peptone [peptəun] *n.* 胨
peptide ['peptaid] *n.* 肽,缩氨酸
amino ['æminəu,'əminəu] *n.* 氨基的
ammonia [ə'məunjə] *n.* 氨
phosphate ['fɔsfeit] *n.* 磷酸盐,磷酸酯
hydrolysis [hai'drɔlisis] *n.* 水解(作用)
fatty ['fæti] *n.* 脂肪的,油的
offensive [ə'fensiv] *a.* 讨厌的,令人作呕的
blanching [bla:ntʃiŋ] *a.* 预煮,漂白
canned [kænd] *n.* 罐装的
inactivate [in'æktiveit] *v.* 使钝化,使失去活性
give rise to 产生,引起,导致
starch [sta:tʃ] *n.* 淀粉
toughness ['tʌfnes] *n.* 韧性,粘稠性
ascorbic [əs'kɔ:bik] *a.* 抗坏血(酸)的
interface ['intɔ(:)feis] *n.* 分界面、(两个独立体系的)相交处
site [sait] *n.* 场所,工地,遗址
off-flavor [ɔ(:)f-fleivə] *n.* 变味,异味
pro-oxygenic [prəu-,ɔksi'dʒenik] *a.* 助氧化的
stimulate ['stimjulənt'] *v.* 刺激,促进
ultraviolet ['ʌltrə'vaiəlit] *a.* 紫外(线)的

NOTES TO THE TEXT

〔1〕 Studies made by chemists in the U. S. Department of

Agriculture have established that protein in stored food products is broken down into simpler substance such as peptones, peptides, amino acids, and ammonia.

句中"made by chemists in the U. S. Department of Agricultre"是 studies 的定语。

that 连接的从句是宾语从句，说明"have established"动作的对象。整个句子的意思为：美国农业部的化学家的研究已经证实，储藏食品中的(有些)蛋白质被分解成象胨、肽、氨基酸、氨这类比较简单的物质。

〔2〕 However, if enzymes in canned foods are not completely destroyed or inactivated, they may give rise to undesirable fiavors, color, and texture, thus lowering the quality; transform starch to sugar, which tends to increase toughness; and destroy ascorbic acid (vitamin c).

然而，如果罐头食品中的酶没有被完全破坏或钝化，食品会产生讨厌的气味，颜色和组织发生变化，这样食品的质量就会下降，淀粉会转变为糖，而使粘稠性增加，并且会破坏抗坏血酸(维生素C)。

SUPPLEMENTARY READING
SCOPE OF FOOD MICROBIOLOGY

The science of microbiology deals with organisms that are invisible or barely visible to the unaided eye. These microorganisms include viruses, bacteria, protozoa, algae, fungi, and certain small worms. Food microbiology deals with such organisms in and on food. Food microbiologists are concerned with the practical implications of the microflora of the food. Can the organism cause a disease in humans? Does the organism cause food

spoilage? Is the presence of the organism aesthetically acceptable in human food? Does the organism change the functional properties of a foodstuff resulting in new tastes, odors, or textures?

Understanding the relationships among the various organisms making up the microflora of a food is important for food microbiologists. Relationships may be symbiotic, antagonistic, or commensurate. The implications of these relationships for safety, spoilage, or new product development are important.

Food microbiogists are primarily concerned with what microorganisms do to a particular human food or to consumers under a given set of conditions. They may also be concerned with the presence in foods of extraneous materials that may be toxic or displeasing for aesthetic reasons.

Both food microbiology and food technology deal with the bandling, processing, preserving, storing, preparation, nutritional content, and safety of food. These disciplines are closely related. The roles that a microbiologist may fill in a food company include training production personnel, quality control of incoming and outgoing material, drafting and implementing new standards, sanitation, process development, trouble shooting, and dealing with regulatory agencies.

In the area of food safety it is essential for the food microbiologist to know the "critical hazard points" in a food processing operation. Since these are the points where contamination can take place, the food microbiologist needs to sample at these opertaional points as part of an overall quality assurance program. In the manufacture of cheese or fermented milk, the microbiologist must be aware of the possible presence in the milk supply of antibiotics that are illegal and interfere with the growth of the

starter cultures.

WORD AND EXPRESSTONS

scope [skəup] *n.* 范围
microbiology ['maikrəubai'ɔlədʒi] *n.* 微生物学
organism ['ɔ:gənizəm] *n.* 生物体,有机体
unaided ['ʌn'eidid] *n.* 无助的,独立的
unaided eye 肉眼
virus ['vaiərəs] *n.* 病毒
protozoa [prəutə'zəu] *n.* 原生动物(门)
algae ['ældʒi:] *n.* (复)藻类
fungi ['fʌngai] *n.* 真菌
microbiologist [maikrəubaiə'lɔdʒist] *n.* 微生物学家
(be) concerned with 涉及,与…有关,参与
implication [ˌimpli'keiʃən] *n.* 本质,关系,含意
microflora [ˌmaikrə'flɔ:rə] *n.* 微生物(植物)群落(区系)
aesthetically [i:s'θetikəli] *ad.* 审美地,艺术地
functional ['fʌnkʃənl] *a.* 官能的,机能的
foodstuff [fu:d'stʌf] *n.* 粮食,食品
result in 导致,归纳为
symbiotic [ˌsimbai'ɔtik] *a.* 共生的
antagonistic [ænˌtægə'nistik] *a.* 对抗性的,敌对(性)的
commensurate [kə'menʃərit] *a.* 同量的,相称(当)的,匹配的
consumer [kən'sju:mə] *n.* 消费者,用户,消耗装置
extraneous [eks'treinjəs] *a.* 体外的,外部的,外加的
toxic ['tɔksik] *a.* 有毒的,中毒的
displeasing [dis'pli:ziŋ] *a.* 使人不愉快的,令人生气的
aesthetic [i:s'θetik] *a.* 审美的,美术的,美学的
nutritional [nju:'triʃəml] *a.* 营养物的,营养的
personnel [pə:sə'nel] *n.* (全体)人员,职员

outgoing ['aut,gəuiŋ] *a.* 输出的,发射的
drafting ['dra:ftiŋ] *n.* 起草,制图
standard ['stændəd] *n.* 标准
sanitation [gæni'teiʃən] *n.* (环境)卫生,卫生(设备)
regulatory ['regjulətəri] *a.* 规章的,管理的
agency ['eidʒənsi] *n.* 手段,能力
critical ['kritikəl] *a.* 临界的,极限的
hazard ['hæzəd] *n.* &*vt.* 危险,公害,机会
contamination [kən,tæmi'neiʃən] *n.* 污染(物)
ferment [fə(:)'ment] *v.* 发酵,酝酿
be aware of 意识(觉察)到,知道
antibiotic [æntbai'ɔtik] *a.* 抗菌(生)的,抗菌(生)素(学)
illegal [i'li:gəl] *a.* 非(不合)法的,违规的
growth [grəuθ] *n.* 生长(物、过程),培养(育)
starter ['sta:tə] *n.* 发酵剂,起子,引子

LESSON TWO

TEXT

ENZYMES

Enzymes, called the catalysts of life, are complex proteins produced by living cells to perform specific biochemical reactions in cellular metabolism. One eminent scientist has said that life is just one enzyme reaction after another. The catalytic efficiency of enzymes is very high. For example, one enzyme molecule can catalyze the reaction of 10,000 to 1,000,000 molecules of substrate per minute. Enzymes are affected by acids and bases, and have maximum, minimum, and optimum temperature for activity.

The high degree of specificity of enzymes is amazing. Each enzyme has a particular job and usually cannot do another job. For example, enzymes will catalyze a reaction of one of a pair of chemical isomers, but not the other. The only difference between such isomers is that one is a mirror image of the other. Frequently, enzymes are named by adding the suffix-ase to the name of the substrate, e. g., proteinase.

Enzymes play an important role in the food industry. In the baking, brewing, and confectionery industries, they are used to liquefy and saccharify starches, to convert sugars, and to modify proteins. In fruit juice and wine making, they improve the yield and flavor of juice, clarify it, and speed filtration.