



آیت نمبر 25-28

قرآنی دعائیں

سورۃ غلذ

رَبِّ اشْرَحْ لِي صَدْرِي ۝ وَيَسِّرْ لِي أَمْرِي ۝
وَاحْلُلْ عُقْدَةً مِّنْ لِّسَانِي ۝ يَفْقَهُوا قَوْلِي ۝

پروردگار، میرا سینہ کھول دے، اور میرے کام کو میرے لیے
آسان کر دے اور میری زبان کی گرہ سلجھا دے تاکہ لوگ میری
بات سمجھ سکیں

رَبِّ زِدْنِي عِلْمًا

MY LORD! INCREASE ME IN KNOWLEDGE.

FOOD SAFETY AND QUALITY MANAGEMENT

DHND

YEAR-V

Session: 2015-2020

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- PLOs – Program Learning Outcomes
- CLOs – Course Learning Outcomes

RESEARCH PROJECT / ASSIGNMENTS

- The students will have to collect materials for food safety and laws
- The students will write a **report (MS Word)** about assigned work and **presented (MS Power Point)** in the class.

RULES AND REGULATIONS

- The student should have at least **75 %** attendance in Theory to appear final term exam.
- The student will be warned on **missing three** consecutive lectures.
- The student will be **struck off** from the rolls for being absent in **six** lectures consecutively.
- The attendance status will be noticed on **monthly** basis.

COURSE DESCRIPTION AND OBJECTIVES

- Food Safety and Risk Assessment
- Food Safety Systems and Food Laws
- Quality Management

CONTENTS - A

1. **Food Safety**
2. **Characterization of food hazards: biological, chemical and physical**
3. **Hazards from natural origin**
4. **Hazards produced during food processing, storage and preparation**
5. **Hazards associated with nutrient fortification**
6. **Food Safety systems, GMP, TQM**
7. **HACCP**
8. **Pakistan Standards and Quality Control Authority**
9. **Pure Food Rules**
10. **Punjab Food Authority**
11. **International Organization for Standardization**
12. **National Standard for Drinking Water Quality**
13. **Food labeling**
14. **Concept of Halal, Islamic food laws and regulations**
15. **Consumer laws in Pakistan**
16. **The World Trade Organization (WTO)**
17. **Codex Alimentarius**

BOOKS

Recommended

- 1.Awan, J.A. and Anjum, F.M. 2010. Food Toxicology. Unitech Communications, Faisalabad, Pakistan.
- 2.Schmidt, R.H. and Rodrick, G.E. 2003. Food Safety Handbook. Wiley-Interscience. A John Wiley & Sons Publications.

Suggested

- 1.PSQCA (Pakistan Standards and Quality Control Authority). 2010. Standards for different food items. PSQCA, Karachi, Pakistan.
- 2.Rai, V.R. and Bai, J.A. 2017. Food Safety and Protection. CRC Press, Taylor & Francis Group.
- 3.Gabriela, S. and Kiran, P. 2016. International Food Law and Policy. Springer International Publishing Switzerland.

READINGS

- PSQCA (Pakistan Standards and Quality Control Authority). **2010**. Standards for Different Food Items. PSQCA, Karachi, Pakistan.
- Meulen, B. and Velde, M. 2008. European Food Law Handbook. Academic Publishers, Wageningen, The Netherlands.
- Government of the Punjab. 2008. The Punjab Pure Food Rules-**2007**. The Punjab Weekly Gazette. Government Printing Press, Lahore, Pakistan.

READINGS

- Riaz, M.N. and Chaudhary, M.M. 2004. Halal Food Production. CRC Press Taylor & Francis Group, Boca Raton, Florida, USA.
- Khan, M.S. **1999**. Consumer Laws in Pakistan. Consumer Rights Commission of Pakistan, Islamabad, Pakistan.
- Awan, J.A. and Anjum, F.M. 2010. Food Toxicology. Unitech Communications, Faisalabad, Pakistan.

READINGS

- Shibamoto, T and Bjeldanes, L. 2009. Introduction to Food Toxicology. 2nd ed. Academic Press, London.
- CAC (Codex Alimentarius Commission). 2007. Codex Alimentarius Commission – Procedural Manual. Joint FAO/WHO Food Standards Programme. FAO, Rome, Italy.
- ISO (International Standards Organization). 2005. Food Safety Management Systems – Requirements for an Organization in the Food Chain. Case Postale, Geneva, Switzerland

READINGS

- Lelieveld, H.L.M., Mostert M.A. and Holah, J. (Editor). **2005**. Good Manufacturing Practices in the Food Industry. In: Handbook of Hygiene Control in the Food Industry. Woodhead Publishing Ltd., Abington, Cambridge, UK.
- Blanchfield, J.R. **1998**. Good Manufacturing Practices. Institute of Food Science and Technology, London, UK.

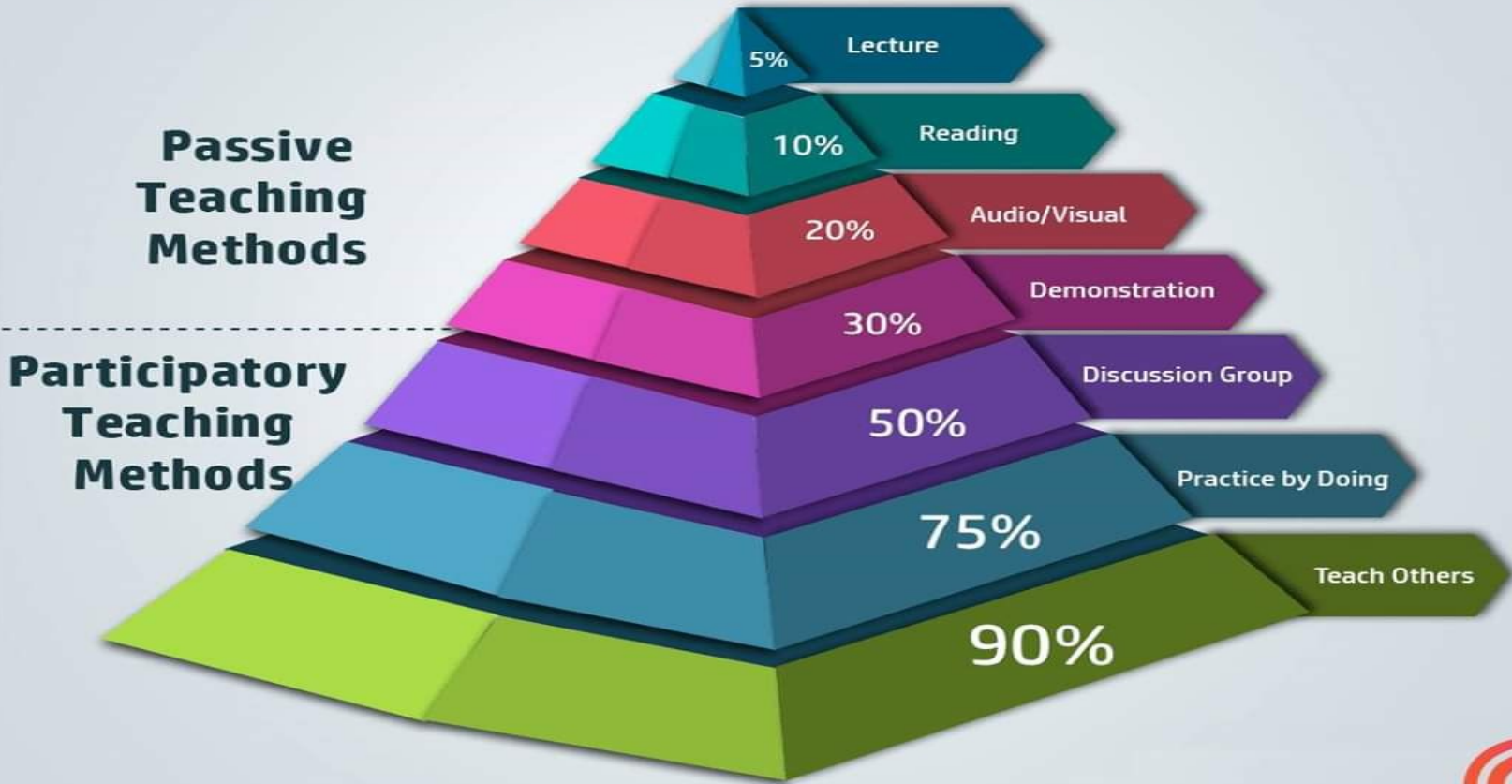
READINGS

- **Punjab Food Authority**
- **Consumer Courts**
- **<https://foodscienceuniverse.com/flr/>**

STUDENTS' AVERAGE RETENTION RATES

THE LEARNING PYRAMID

KNOWLEDGE RETENTION RATES



Adapted from National Training Laboratories, Maine



NATIONAL TRAINING LABORATORIES, MAINE

**BETHEL IS A TOWN IN OXFORD COUNTY,
MAINE, UNITED STATES**

L # 2. INTRODUCTION AND DEFINITIONS

Outline

- **Food**
- **Nutrition**
- **Health**
 - **Functional Foods**
 - **Nutritious Food**

FOOD ?

“Food is a **substance** that after **ingestion** and **digestion** may provide materials for **energy, growth, development, maintenance** and/or **repair of cells/ tissues/ organs/ systems/ organism”.**

•It is usually of **plant** or **animal origin**, and contains essential nutrients, such as **carbohydrates, fats, proteins, vitamins, or minerals and/or water.**

(Robert A. Ronzio. 2003. The Encyclopedia of Nutrition and Good Health. 2nd Ed. Facts on File, Inc. 132 West 31st Street, New York NY 1000)

FUNCTIONAL FOODS

- Foods that contain **physiologically active** compounds that provide **health** benefits beyond their **nutrient** contributions.
- Sometimes called *designer foods* or *nutraceuticals*.

(Sharon Rady Rolfes, Kathryn Pinna and Ellie Whitney. 2009. Understanding Normal and Clinical Nutrition. 8th Ed. Wadsworth, Cengage Learning, USA.)

NUTRITIOUS FOOD ?

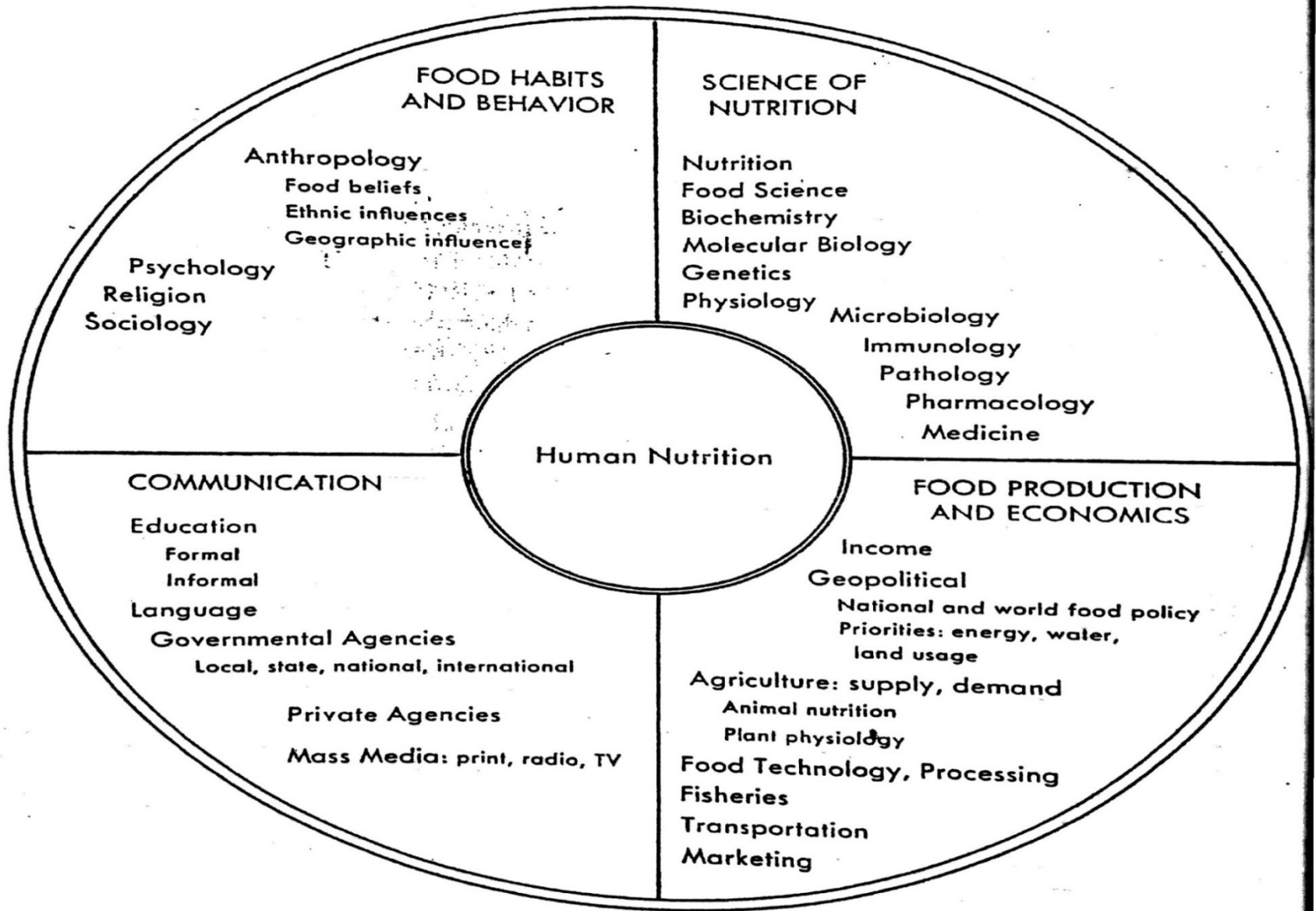
- Providing **nourishment**, especially to a high degree; nourishing; **healthful**
- **Firstly, healthy food** consists of all the essential nutrients like **proteins, carbohydrates, lipids, minerals vitamins** and **water**
- **Secondly**, it is **hygienic** and **doesn't** contain any **germs / toxins**
- **Thirdly**, it should include all **sorts (variety)** of eatables like veggies, fruits, meat, dairy, sweets etc. in right proportion
- In a **nutshell**, healthy food keeps the **body fit** and at its **top**

(Ronzio, R A. 2003. The Encyclopedia of Nutrition and Good Health. 2nd Ed. Facts on File, Inc. 132 West 31st Street, New York NY 1000)

NUTRITION

“The science of **foods** and their components (**nutrients** and other **substances**) including the relationships to **health** and **disease** (actions, interactions, and balances); **processes** within the body (ingestion, digestion, absorption, transport, functions, and disposal of end products); and the **social, economic, cultural** and **psychological** implications of eating.”

(Insel et al., 2004)



Human nutrition involves the study and application of many disciplines

HEALTH ??

“Health is a **state** of complete **physical, mental** and **social well-being** and **not** merely the **absence** of **disease or infirmity**”.

(WHO, 1946...)

(Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, N.Y., 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.)

L # 3. INTRODUCTION AND DEFINITIONS

Outline

- **Nutrients**
- **Diet**
- **Balanced Diet**
- **Dietitian**
- **Factors for Selection Food as Diet**
- **10 Principles of Human Nutrition**

NUTRIENTS

Nutrients

“**Chemical** substances obtained from **food** and used in the body to provide **energy**, **structural** materials, and **regulating** agents to support **growth**, **maintenance**, and **repair** of the body’s tissues. Nutrients may also reduce the **risks** of some **diseases**”.

Essential Nutrients

“Nutrients a person must obtain from food because the body cannot make them for itself in sufficient quantity to meet physiological needs; also called **indispensable nutrients**”.

- About **40 nutrients** are currently known to be essential for human beings.

(Sharon Rady Rolfes, Kathryn Pinna and Ellie Whitney. 2009. *Understanding Normal and Clinical Nutrition*. 8th Ed. Wadsworth, Cengage Learning, USA.)

DIET & BALANCED DIET

Diet

“The **foods** and **beverages** a person **eats** and **drinks**”.

“In nutrition, diet is the sum of food consumed by a person or other organism”.

Balanced Diet

“The diet that may **furnish** bodily **requirements** of an **individual**”.

Dietitian

“A **person** trained in **nutrition**, **food science**, and **diet planning**”.

(Sharon Rady Rolfes, Kathryn Pinna and Ellie Whitney. 2009. Understanding Normal and Clinical Nutrition, 8th Ed. Wadsworth, Cengage Learning, USA.)

HEALTHY DIET & MEDICAL DIET

Healthy Diet

“A healthy diet helps to protect against malnutrition in all its forms, as well as non-communicable diseases (NCDs), including such as diabetes, heart disease, stroke and cancer”.

“Adequacy, variety, and balance are key characteristics of a healthy diet”.

Medical Diet

“A prescribed course of eating and drinking in which the amount and kind of food, as well as the times at which it is to be taken, are regulated for therapeutic purposes”.

FACTORS FOR SELECTION FOOD AS DIET

- Religious teachings / guides
- Age
- Gender
- Climate
- Weather
- Economy
- Physical status / Medical conditions
- Physical activity
- Socio economic status
- Life style
- Eating habits

FACTORS FOR SELECTION FOOD AS DIET..

- Social Pressure
- Emotional Comfort
- Availability / Convenience
- Accessibility
- Affordability
- Convenience
- Nutrition and Health Benefits
- Prescribed Foods
- Prescription / Family / Friends
- Body weight and Image
- Nutrition and Health benefits

FACTORS FOR SELECTION FOOD AS DIET..

- Personal preferences / Liking and disliking
- Positive and negative associations
- Ethnic heritage
- Culture
- Traditions
- Values
- Norms
- Customs
- Festivals
- Media / Marketing

10-PRINCIPLES OF HUMAN NUTRITION

1. Food is a **basic need** of humans
2. Foods provide **energy** (calories), **nutrients**, and other **substances** needed for **growth** and **health**
3. Health **problems** related to **nutrition originate** within **cells**
4. **Poor nutrition** can result from both **inadequate** and **excessive** levels of nutrient intake
5. Humans have **adaptive mechanisms** for managing **fluctuations** in food intake

10-PRINCIPLES OF HUMAN NUTRITION

6. **Malnutrition** can result from **poor diets** and from **disease** states, **genetic** factors, or **combination** of these causes
7. Some groups of people are at **higher risk** of becoming **inadequately nourished** than others
8. **Poor** nutrition can influence the **development** of certain **chronic diseases**
9. **Adequacy**, **variety**, and **balance** are key characteristics of a **healthy diet**
10. **There are no "good" or "bad" foods**

L # 3. FOOD SAFETY

FOOD SAFETY

“Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent foodborne illness”.

- This includes a number of routines that should be followed **to avoid potential health hazards**
- In this way **food safety** often overlaps with **food defense** to **prevent harm** to **consumers**
- The tracks within this line of thought are **safety** between **industry** and the **market** and then between the **market** and the **consumer**

FOOD SAFETY

- Food can **transmit** disease from **person to person** as well as serve as a **growth medium** for **bacteria** that can cause **food poisoning**
- In developed countries there are intricate **standards** for food **preparation**, whereas in lesser developed countries the main issue is simply the availability of adequate **safe water**, which is usually a critical item
- In theory, food poisoning is **100 %** preventable

FOOD SAFETY

- In considering **INDUSTRY TO MARKET** practices, food safety considerations include the origins of food including the practices relating to Food **Hygiene**, Food **Labeling**, Food **Additives** and **pesticide** residues, as well as **Policies** on **Biotechnology** and **Food** and **guidelines** for the management of governmental **Import** and **Export** **Inspection** and **Certification** systems for foods.
- In considering **MARKET TO CONSUMER** practices, the usual thought is that food ought to **be Safe in the market** and the concern is **safe Delivery** and **Preparation** of the food for the **consumer**.

WHO: KEY PRINCIPLES OF FOOD HYGIENE

1. **Prevent** contaminating food with **pathogens** spreading from **people**, **pets**, and **pests**
2. **Separate raw** and **cooked** foods to prevent contaminating the cooked foods
3. **Cook** foods for the **appropriate length of time** and at the appropriate **temperature** to kill pathogens
4. **Store** food at the **proper temperature**
5. Do **Use safe water** and **safe raw materials**

WHAT IS A FOODBORNE ILLNESS?

- **Sickness** caused by **eating** food that contains a **harmful** substance
- Commonly known as **food poisoning**, it is caused by eating food that is contaminated by **bacteria** or other **harmful** substances

VULNERABILITY: POPULATION AT RISK

EVERYONE is potentially at risk for food-borne illness, but the following groups are at higher risk than others:

- **Children**
- **Pregnant** women
- **Seniors**
- Individuals with **compromised** immune systems
 - Medications that weaken natural immunity

VULNERABILITY: POPULATION AT RISK

Groups with an *increased risk* include:

- Young children
- Pregnant women
- Elderly men and women
- Individuals with autoimmune disorders, liver disease or decreased stomach acidity
- Alcoholics – because of possible liver damage/disease
- Individuals with reduced immune function due to chemotherapy or radiotherapy, and those taking steroids or antibiotics to treat immune deficiencies
- Individuals who are malnourished
- Individuals with viruses
- Individuals in institutionalized settings

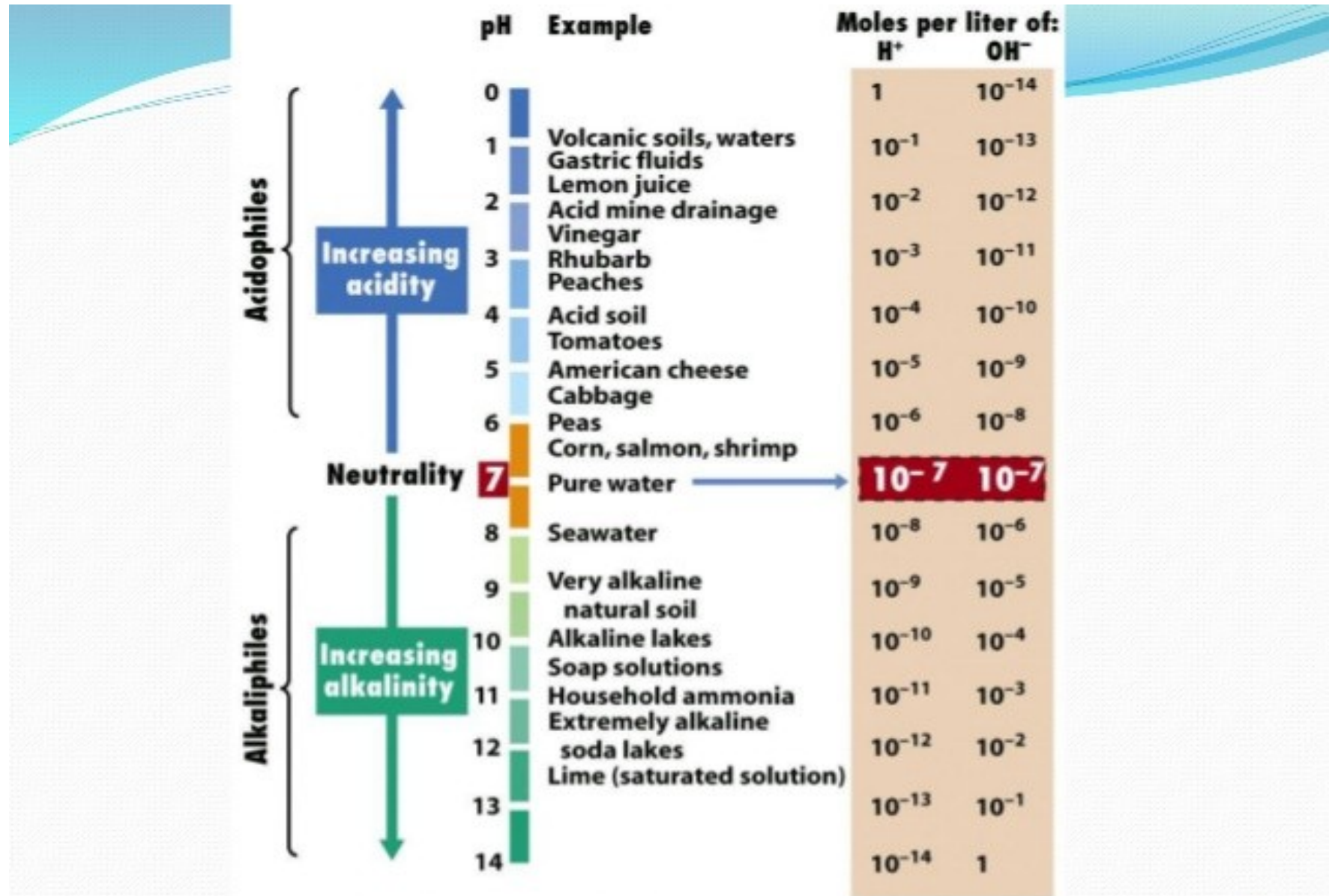


Figure 6-22 Brock Biology of Microorganisms 11/e
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