ENGLISH FOR SPECIFIC PURPOSES (ESP)

An English Book for Medical Students

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PREFACE

English for Specific Purposes (ESP): An English Book for Medical Students is a guide for various medical students who want to explore the English relate to their study interest or content of knowledge. Identifying the vocabulary for ESP is important for setting learning goals and programs of the study, so finding out what learners know before they start a study can help determine what their vocabulary needs are.

This book has been written for those who wish to understand the vocabulary and explanation of English for Specific Purposes (ESP). As we know that textbook English is seldom of the language of work-related environment. Obviously familiar words and phrases may both amuse and confuse the student when used in different context. Then, nowhere is the more apparent than in the field of healthcare.

It is hoped that this book will serve a brief account of the study, both for those who are learning for their own study interest and for those who will go on the study in greater detail.

ACKNOWLEDGEMENT

The authors would like to thank all the lecturers at University of Salsabila, University of Faletehan, Poltekkes Zanjabila Banten, and English Education Department of UIN Sultan Maulana Hasanuddin Banten who contributed their ideas in the writing of this book.

A big thank you to our families who have allowed us the space to write.

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CHAPTER I
HUMAN BODY

The human body is really complicated. Every shape or every part has the function to do for particular life. It is made up different organ systems, organs, tissues and cells. According to Faller & Schuenke (2004: 2) The human body is composed of roughly **75 x 10^{12}** cells (= 75,000 billion cells), of which as many as **25 x 10^{12}** (25,000 billion cells) occur as erythrocytes in the blood and which therefore constitute the commonest type of cell.

	Cells	Tissues	Organs	Systems
Definition	the smallest creature or living thing in the body of human, animal and plant	An organization of many cells, or combination of similarly differentiated cells which act together to do a common function.	A part of body which do for a particular activity, or organizations of different kinds of tissues.	Organization of many different kinds of organs.
Types	**Unicellular**, a single-celled organism, such as	**Epithelial**, a thin basement membrane which provides		1. Nervous 2. Skeletal 3. Muscular 4. Circulatory 5. Digestive

	flagellates, amoebas, bacteria and fungi	mechanical support for epithelium. It divided into **surface** (cover external and internal surfaces in the body), **glandular** (produce secretions which are deposited in the external and internal surface of the body), **sensory** (part of structure of sense organs)		6. Respiratory 7. Urinary 8. Reproductive 9. Endocrine
	Multicellular, the cells organize in large unit, for example human, plant and animal.	**Connective**, connect organs with blood vessels. **Supporting**, to support function predominates, or supporting cartilage and bone tissues.		
		Muscle, as chemical and electrical		

		stimuli.		
		Nerve, is made up individual, neuron and glia cells.		

A. Head

No	Parts of Body	Function
1	Hair	As Human's crown or to moist or to protect inside the skull, brain.
2	Brain	As center of nervous system
	a. Right Brain	Related to Emotional, Language
	b. Left Brain	Related to Rational, Math
	c. Small Brain	Keep the unforgettable memories
3	Forehead	To protect the soft organ from the front side

4	Eyebrow	To hold the water sweat fall on eyes
5	Eyelash	To filter the light and to hold the water or dust fall on eyes
6	Eyes	To see, or view, or stare, or look
7	Nose	Respiratory organ, inhale and exhale
8	Nostril	To filter the air comes in the nose
9	Cheek	To keep the face temperature, help the digestive system
10	Jaw	Food acquisition
11	Ear	To hear or to listen
12	Mouth	Organ of digestive system

13	Lip	To hold the food and to drink, to keep the unwanted objects
14	Tongue	To feel the taste or flavor
	a. Front side	To feel sweet
	b. Left and Right side	To feel sour and salty
	c. Back side	To feel bitter
15	Teeth	To break down the food
16	Chin	Help the jaw to chew

B. Upper Body

No	Parts of Body	Function
1	Neck	To make head's movement
2	Adam's apple	To protect the walls and larynx
3	Chest	To protect vital organs such as lungs, heart

4	Breasts (for female)	To provide mother's milk
5	Nipples	To breastfeed
6	Stomach	To store food (to change the food into energy)
7	Waist	To distribute fat, or protect the inside soft organ such as kidney
8	Navel/Belly Button	To keep body's temperature, or to carry the nutrients when pregnant
9	Back	To integrate the activity between lower limbs, upper limbs, spine and pelvis.
10	Shoulder	To support and allow a wide range of motion, to place the hand in various positions to accomplish upper limb exercises.

11	Arm	To perform motions and tasks
12	Armpit	To connect the arm and shoulder, to make forearm movement
13	Elbow	To flex and extend the arm in grasping and reaching things.
14	Forearm	To do biceps and triceps
15	Wrist	To make movement along two axes such as flexion, extension, adduction and abduction
16	Hand	To manipulate object in accomplishing a goal
17	Finger	To hold, feel the objects
	a. Thumb	To hold, feel the objects
	b. Index finger	To hold, feel the objects

	c. Middle finger	To hold, feel the objects
	d. Ring finger	To hold, feel the objects
	e. Little finger	To hold, feel the objects
18	Fingernail	To shield the fingertip

C. Lower Body

No	Parts of Body	Function
1	Penis (politely, Mr. P)	Urinary and reproductive system
2	Vagina (Ms. V)	Urinary and reproductive system
3	Hips	To make feet movement
4	Buttocks	To have a seat
5	Kidney	To filter the blood
6	Thigh	To extend the leg
7	Leg	To provide locomotion and

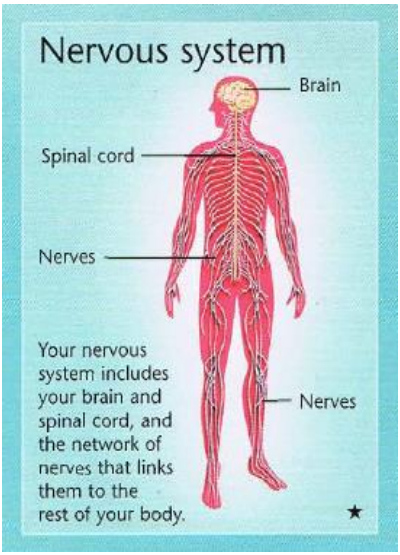
		support the body
8	Knee	To swing forward or back while walking, running and kicking.
9	Shin, or tibia	To distribute weight across knee and to ankle
10	Ankle	To move up and down foot's movement
11	Feet	To make movement such as walk, run, swim
12	Toe	To keep balance, to help foot's movement
	a. Big toe	To keep balance, to help foot's movement
	b. Index toe	To keep balance, to help foot's movement
	c. Middle toe	To keep balance, to help foot's movement
	d. Ring toe	To keep balance, to help

		foot's movement
	e. Little toe	To keep balance, to help foot's movement

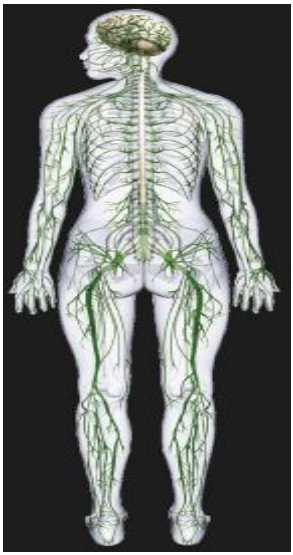
D. Human Body System

Human body is truly an amazing machine or system. It works together to fulfill vital function and maintain the health. There are nine systems will briefly explain such as nervous, skeletal, muscular, circulatory, respiratory, digestive, urinary, reproductive and endocrine system.

1. Nervous System



Picture 1
(taken from the Usborne Complete Book of the Human Body, Anna Clayborn)



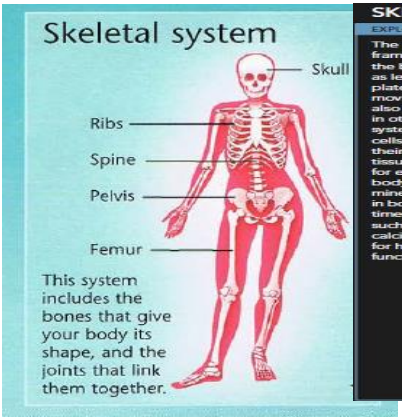
Picture 2
(taken from the Concise of Human Body, Steve Parker)

Based on the picture 1, the nervous system is divided into the brain, spinal cord and nerves. Brain controls human's feelings, movements and thoughts. It also controls what human don't think or unconsciously such as breathing and digesting food while sleeping. Spinal cord shows a segmental structure and serves mainly as a reflex organ. Nerves compose of bundles of

communication strands. There are three types of nerve cells, or called as neuron, such as sensory neuron (responsible for transmitting impulse, mostly from five senses, from all parts of the body to the spinal cord and brain), motor neuron (transmitting impulse from the brain and spinal cord to all parts of body), and interneuron (responsible for conducting from sensory to motor neuron).

There are three of nervous systems in the body, they are central nervous system (CNS) which is brain and spinal cord, peripheral nervous system (PNS) and autonomic nervous system (ANS). Meanwhile, Faller & Schuenke (2004: 533) divided kinds of nervous system which are somatic nervous system (related to conscious movement, voluntary movement and rapid processing of information) and vegetative nervous system (responsible for homeostatic and autonomous regulation of organ functioning).

2. Skeletal System



Picture 3
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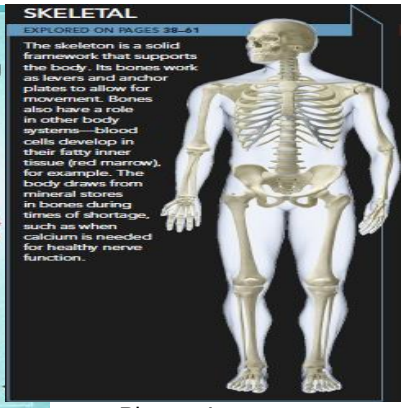


Picture 4
(taken from the Concise of Human Body, Steve Parker)

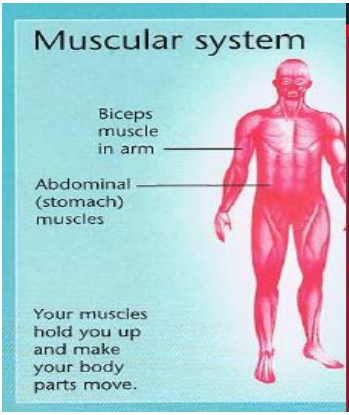
The skeleton holds human body up, provides a rigid framework and supports the structure for whole of the body. The skeletal system consists of all the bones, cartilage, and joints.

The bones are classified according to the structure, or external shape, as like long, short, flat and irregular bone. The *long* bone is for example bones in the leg and arm, *short* bone such as wrist bones, *flat* is like skull bone, ribs and breast bone, and *irregular* is like spinal bones.

Meanwhile, cartilage is a bone which is softer and flexible like rubber. There are some kinds of cartilage, including hyaline cartilage, fibrocartilage and elastic cartilage. The hyaline cartilage is found in the trachea and nose and also covers bone end in joints and attached ribs in the sternum. The fibrocartilage is found in the jaw and knee joint. The last, elastic cartilage is found in the outer ears and larynx.

The joints, Faller & Schuenke (2004: 117), are the connections between cartilaginous and/or bony parts of the skeleton. Based on the shape and configuration of joint surfaces, joints have types such as *ball-and-socket joint* which is found in the shoulder and hip, *condylar joints* are in the forearm and the wrist, *hinge joint* is found in the elbow, saddle joint is found in the base of thumb, and *plane joint or gliding joint* is found in the ankle.

3. Muscular System



Picture 5
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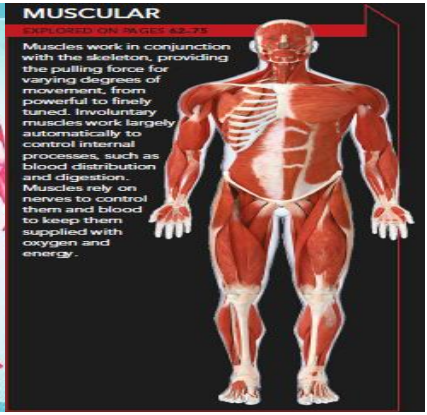
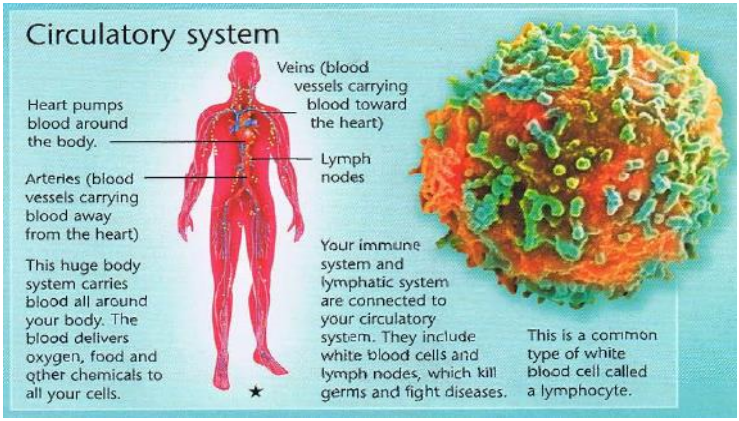


Picture 6
(taken from the Concise of Human Body, Steve Parker)

Parker (2007: 65), muscles are responsible for movement. There are three types of muscles, which are skeletal muscle, (or called as voluntary muscle), smooth muscle (or called as involuntary muscle) and cardiac muscle. According to Thibodeau and Patton (2012: 142) *a skeletal muscle* is an organ composed mainly of skeletal muscle fibers and connective tissue. It is attached to bone. Meanwhile smooth muscle can be found in the walls of digestive tract, urinary bladder, arteries and other internal organ. Then, cardiac muscle is formed the walls of the heart.

How do muscle make human body move?, according Parker (2004: 71) the contraction between skeletal muscles and tendons produces body movement. Tendons link the muscle to the bone, they transfer the force from the muscle to the bone during the muscle contraction. Otherwise, ligaments link bones to the bones.

4. Circulatory System



Picture 7
(taken from the Usborne Complete Book of the Human Body, Anna Clayborn)

According to Rohen and his friends (2011: 16) the center of the circulatory system is the heart, which is situated in the thoracic cavity and in contact with the diaphragm. In

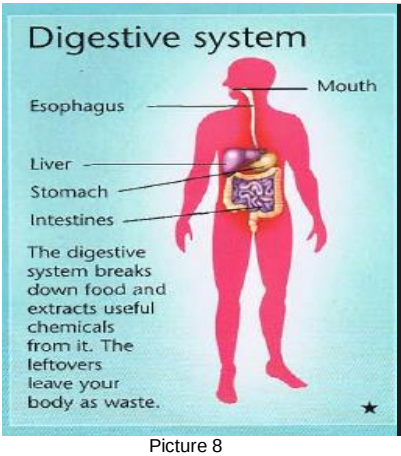
order that, circulatory system is also called as cardiovascular system (cardio means heart). The circulatory system transports respiratory gases, nutrient molecules, wastes and hormones throughout the body by blood vessels.

There are three kinds of blood vessels, arteries, veins and capillaries. According to Hudson and Whitaker (2015: 122) arteries carry blood away from the heart and deal with high pressure, and so have strong elastic walls. It means arteries are responsible for carrying the blood from the heart to all parts of the body. Arteries are red blood vessels. Then, blood pressure is the pressure of blood in the arteries and is a measure of the tension in the arterial wall produced by the blood forced through from the heart, Lewis and Rubenstein (1981: 24).

Veins are blue blood vessels. They are responsible for carrying blood from all parts of the body back to the heart. Arteries and veins may be differentiated by the color of blood vessels and the pressure, arteries are high blood pressure and veins are low blood pressure.

Claybourne (2006: 61) arteries and veins are connected by minuscule blood vessels, called capillaries. Therefore, capillaries are responsible for linked all the arteries and vein, from the high pressure to low pressure and carrying gases, nutrients and waste products.

5. Digestive System

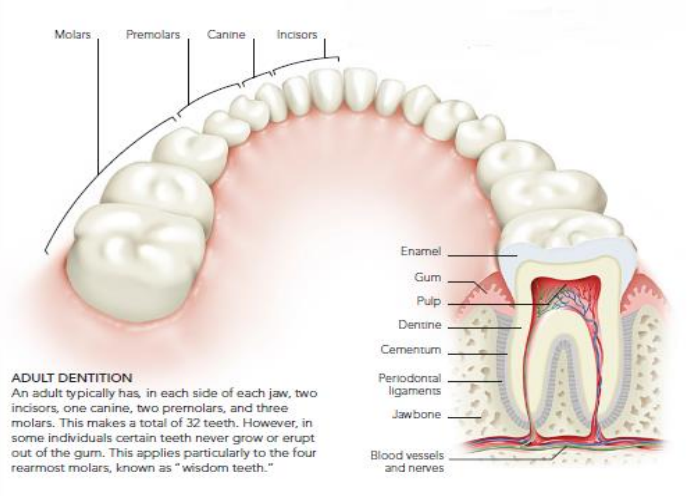


Picture 8
(taken from the Usborne Complete Book of the Human Body, Anna Clayborn)

Picture 9
(taken from the Concise of Human Body, Steve Parker)

Lewis and Rubenstein (1981: 48), the digestion of food begins in the mouth, the teeth mechanically breaking up what is eaten, the saliva providing lubrication and the tongue mixing and molding the food in preparation for swallowing. It means the digestion in the mouth can be

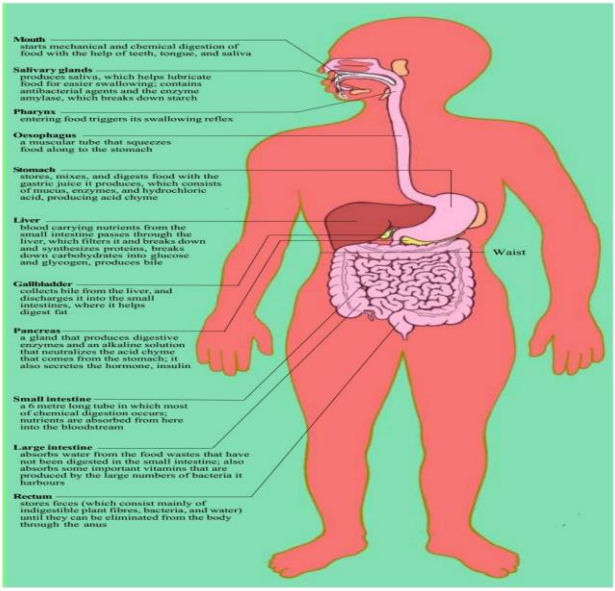
named as mechanic digestion, which is mostly done by the teeth. There are 32 teeth which consist of 8 incisors, 4 canines, 8 premolars, and 12 molars.



Picture 10
(taken from the Concise of Human Body, Steve Parker)

Meanwhile, the chemical digestion is done by the stomach and small intestine. The stomach is responsible for digesting food chemically and physically, and small intestine is responsible for continuing the chemical breakdown and absorbing nutrients.

Here is the pattern and organ:



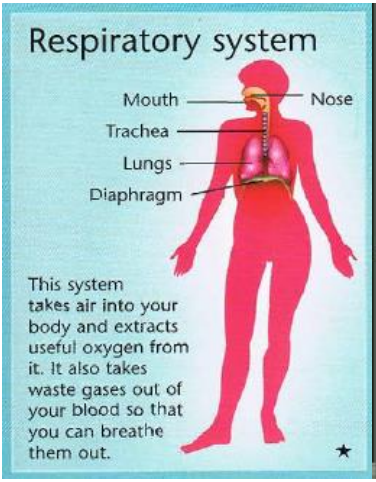
Picture 12
Organ and Its Function of Digestive System

6. Respiratory System

Respiratory system is the process of inhale and exhale, which inhale gets the oxygen to lungs, and exhale releases the carbon dioxide and water from the lungs to the outside. Respiratory system, in close connection with circulatory system, takes the oxygen

for the blood cells and removing the carbon dioxide from the body. The respiratory system is done by the lungs or, other name is, pulmones. Hudson and Whitaker (2015: 102) said that lungs have between 300 – 500 million alveoli, which is where gas exchange occurs.

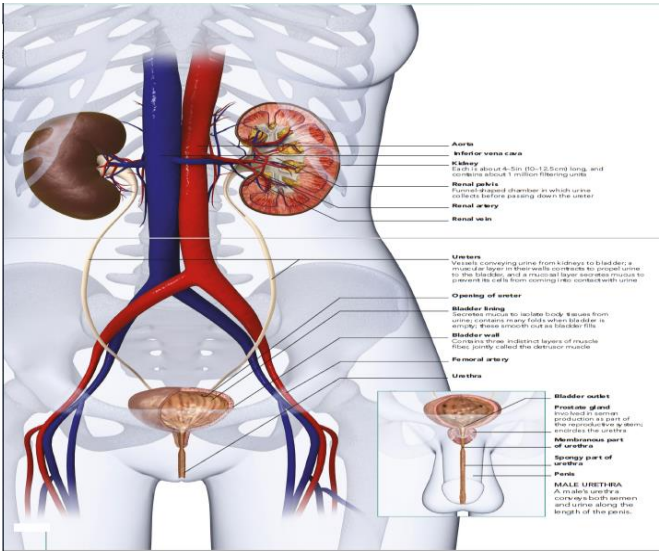
Respiratory organs which involve gas exchange include nose (air enters the lung through the nostril, which has function to filter the air), then the clean air flows into the ***nasal cavities*** (left and right), to the ***pharynx***, or called as throat, then enters the ***larynx*** which has function to separate respiratory tract and digestive passages, to close the trachea to the pharynx, and voice production, after that to the ***trachea*** (windpipe which is responsible for coming in and out the air), to the ***bronchial*** (which has three in the right and two in the left), reach to the lungs.



Picture 13
(taken from the Usborne Complete Book of the Human Body, Anna Clayborn)

Picture 14
(taken from the Concise of Human Body, Steve Parker)

7. Urinary System



Picture 15
(taken from the Concise of Human Body, Steve Parker)

What we eat and drink, besides the energy, they will become waste products. Waste products are produced by the body as long as we live and the waste products are formed in urine. There are some organs which are responsible for removing the waste products from the body, such as:

a. Kidneys, a pair of vital organs which have function to eliminate of metabolic products and toxic

substances, to maintain of electrolyte concentration, to regulate circulation and forming blood.

b. Renal pelvis, which are two parts, renal artery and renal vein. Renal artery is responsible to carry blood containing oxygen and urea from the aorta to kidneys. Meanwhile renal vein is for bringing filtered blood from the kidneys to the inferior vein cava.
c. Ureter, it carries from renal pelvis to urinary bladder.
d. Urinary bladder is to retain urine until the urine is removed from the body.
e. Urethra, the tube is to pass the urine from the body.

8. Reproductive System
    a. Male Reproductive Organs

    According to the development, male reproductive organs have two parts, internal and external. The internal organs involve:

    - The Testes, besides as the male reproductive hormone, it is also to produce the sperm.
    - The epididymis, which is responsible to store the sperm.

- Vas Deferens, to transport the sperm during ejaculation.
- Seminal vesicles, has the function to produce the bulk of seminal fluid and provide energy source for sperm.
- Prostate, is to produce fluid for semen.

Whereas, the external organs involve:

- Penis, is an organ to pass the urine and semen (or sperm)
- Scrotum, have two organs which are responsible to hold testes out of abdomen and to keep them cool which required for sperm production.

b. Female Reproductive Organs

Same with the male reproductive organs, the female reproductive organs also has the internal and external.

The internal are:

- The Two Ovaries are to produce women's reproductive hormone and contain the ova which is released during menstrual cycle.

- Fallopian tubes are to carry the ovum to uterus, and sperm to the ovum where the fertilization occurs.
- Uterus is responsible to protect and nourish developing offspring.
- Vagina is an organ for childbirth, release the menstrual blood, and the copulation.

Meanwhile, the external are labia major, labia minor, clitoris, and vestibule vagina have the same function to prevent infection from reaching vagina, and to pass the urine.

9. Endocrine System

Endocrine system relates to the hormones in our body. Faller & Schuenke (2004:309) Hormones are chemical messengers consisting of variety of substances (e. g., proteins, peptides, steroids) that mostly act on their target cells in very small amounts. Below are the organs or glands with their function which produce the hormones:

No.	Organ	Function
a	Hypothalamus	Releases hormone production which control pituitary glands, and to combine between nervous system and endocrine functions which allowing nervous system influence endocrine functions.
b	Pineal Gland	Release melatonin, which controls sleep-wake patterns, and regulates the production of hormones related to reproductive organs.
c	Pituitary Gland	As a 'master gland', which regulate may other glands and produce the hormones such as Thyroid-Stimulating Hormones (TSH), Adrenocorticotropic Hormones (ACTH), Follicle-Stimulating Hormones (FSH), Luteinizing hormones (LH),

		Growth Hormones (GH), prolactin and oxytocin.
d	Thyroid Gland	Regulate aspect of metabolism, including maintenance of body weight, energy use, heat rate.
e	Parathyroid Gland	Cooperate with thyroid to control level of calcium.
f	Thymus Gland	Produce the hormone which related to development of white blood cells and part of immune system.
g	Adrenal Gland	Regulate blood pressure, body's use of fats, carbohydrates, proteins and minerals.
h	Pancreas	Produces hormones insulin (to raise blood glucose) and glucagon (to decrease blood glucose).
i	Heart	Release atriopeptin which

		controls blood volume and blood pressure, also regulate fluid balance.
j	Kidney	Release antidiuretic hormone (ADH), regulates amount of water removed from the blood.
k	Stomach and intestines	Produce hormone which stimulates production and elimination of digestive enzymes.
l	Ovary	Release estrogen and progesterone which are stimulated from pituitary gland and regulate menstrual cycle.
m	Testes	Release testosterone which regulates the growth and development male sexual organs and production of sperm.

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CHAPTER II
MEDICAL DEVICES

In this chapter, it is discussed about medical devices such as first aid, laboratory equipment and surgical instrument.

A. First Aid Kit

Furst (2018: 1) first aid is all about providing initial lifesaving care before the arrival of professional help. It aims to preserve the victim's life, to prevent worsening of the condition or situation, and to promote the recovery from injury and illness. It has value to self, other and remote location. Then, first aid is very helpful if you have more information and better training when you are to deal with unexpected injury and illness.

There are kinds of first aid according to its function:

1. The ABCs of First Aid

   According to Saubers (2008: 16) the ABCs of first aid is a mnemonic that stands for airway, breathing and circulation. In the ABCs of first aid we need to know

how to examine the vital signs, like temperature, pulse, respiratory and blood pressure.

The ABCs of first aid relate to the cardiopulmonary resuscitation (CPR). CPR is a lifesaving technique that is performed when a person's breathing or heart has stopped, according to Shirley (2012: 16). The tools we must provide consisting:

a. Thermometer
b. Blood pressure cuff
c. Face shield
d. Stethoscope
e. Pocket mask, etc.

2. Bandages and Wound Care

In the daily life, from the kid to adult we get the wound in our skin like cuts, grazes, severe bleeding, head injuries, and etc. here is the tools:

a. Alcohol wipes
b. Antiseptic (cream or wipes, and solution)
c. Antibiotic ointment packets
d. Antibacterial hand gel or wipes
e. Bandages (adhesive, triangular, elastic roller)
f. Cotton balls

g. Cold packs
h. Eye pads
i. Gauzes (pads and roller bandage)
j. Gloves
k. Iodine wipes
l. Insect sting relief
m. Vaseline petroleum jelly
n. Tape (adhesive)

3. Medication

The medication is needed when the bandages and wound care is not effective to relieve the pain or effect the pain. Below are the medicines you may need:

a. Painkillers or reducing fever, such as paracetamol, ibuprofen, acetaminophen, and aspirin.
b. Anti-diarrhea, such as loperamide.
c. Stomach indigestion, such as antacid.
d. Antihistamine and calamine lotion, to relieve itchiness, sneezing, and watery eyes from an allergy.
e. Antifungal cream and ointment.
f. Cough suppressant.
g. Decongestant tablet.

h. Hydrocortisone, to relieve minor skin irritation, itches and rashes.
i. Laxative, to relieve constipation.
j. Nasal spray, to relieve symptoms of colds and stuffy nose.
k. Hand sanitizer

4. Medical Equipment

Medical equipment in the first aid needs to ease in dealing unexpected situation. The equipment such as:

a. Mask, such as surgical mask, cotton mask, N95 mask
b. Face shield
c. Scissors
d. Safety pins
e. Pocket knife
f. Thermometer
g. Tweezers
h. Lighter
i. Torch or flashlight
j. Syringe
k. Penlight
l. Cotton swab and cotton wool

B. Medical Laboratory

Laboratory, mostly called as lab, in medical is very necessary for human being. According to Merriam-Webster (Merriam-webster.com) laboratory is a place equipped for experimental study in a science or for testing and analysis. There are three main functions in lab such as research resource, learning method, and education infrastructure. The tools which consisting in the lab is:

No.	Lab Tools	Function
1	 Human Skeleton	To show the parts of human skeleton with their function.

2	 Human Body Model	To show the parts of the body with their function.
3	 Microscope	To see microorganism and cells.
4	 Microcame	To change the analog microscope to digital.

5	 Preparation preserved	To analyze skeletal, smooth and cardiac muscle, to analyze stem and leaf, and etc.
6	 Preparation box	To save the preparation preserved.
7	 Thin glass	To put the observed microorganism/object.

8	 Surgical tray	To put the object/specimen will be in surgery.
9	 Autoclave	To sterilize the observed substances or tools in research.

10	 Stand rod device	To prop the glass
11	 Bosshead	To connect the stative with clamp or tunnel.

12	 Petri dish	To culture the bacteria, spora or the seeds.
13	 Luv	To observe small object seemed bigger.
14	 Respirometer	To measure breathing speed rate for insect, flower and root.

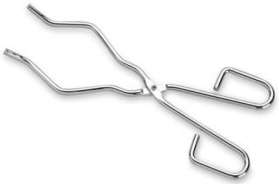
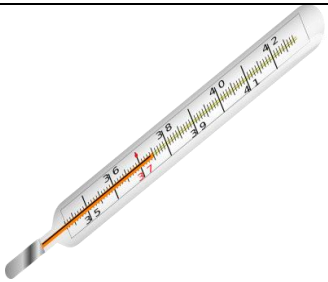
15	 Genetic box	To analyze the combination of gen and genetic principles.
16	 Centrifuge	To separate the liquid based on the density.
17	 Erlenmeyer	To hold the liquid

18	 Beaker	To hold liquid
19	 Mortir and pestle	To grind the specimen/material/ object.
20	 Graduated cylinder	To measure liquid volume

21	 Spatula	To transfer/move the material powder and chemical.
22	 Test tube	To hold liquid
23	 Test tube clamp	To hold hot test tube.

24	 Bunsen burner	To heat substances.
25	 Spiritus burner	To heat substances with spiritus.
26	 Dropper pippete	To expel the liquid in drops.

27	 Pippete bulb	To pull up liquid into a pippete.
28	 Volumetric pippete	To measure small amount of liquid.
29	 Wash bottle	To rinse various pieces of laboratory glassware.

30	 Crucible tong	To hold hot crucible.
31	 Volumetric flask	To make up solution in known volume.
32	 Thermometer	To measure temperature.

33	 Funnel	To pour liquid or other substance.
34	 Forcep	To pick up or hold small objects.
35	 Filter paper	To separate liquid from solid.

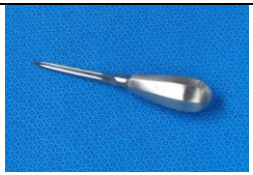
C. Surgical Instrument

Goldman (2008: 1) stated that when surgery is recommended to an individual, the proposed operation, regardless of its extent, is perceived by the patient to be a “major” procedure. It can be concluded that surgery, due to the doctor’s recommendation, is the major instruction to the patient to cure the disease.

Wray and his friends (2003: 1) stated that an understanding of the basic principles of surgery is essential for all surgeons to be able to apply such knowledge to their specialty. It can be summarized that surgery is an application to the specialty when she or he conducts the surgeon.

According to Jacobs (2007: 88) Surgery is accomplished by instruments being passed back and forth between scrub nurse and surgeon. It can be stated that surgery is conducted by the instruments. Different surgery is different instrument, and below the instruments and their function:

No.	Name and Picture	Function	Kind of Surgery
1.	 Olsen-Hegar Needle Holder	To hold and guide suture needles securely for suturing, combination scissor and needle holder which speeds up the suturing process.	Veterinary, podiatric, and dental surgery.
2.	 Scalpel Handle	To hold scalpel blades.	All surgery
3.	 Backhaus Towel	To attach towels, to handle sponges, and	General surgery

	Forceps	other material.	
4.	 Beckmann Weitlaner Retractor	To retract or hold back tissue or bone for surgical exposure.	General surgery Orthopedic surgery Spinal surgery
5.	 Bone Awl	To penetrate bone, open bone canals. To direct pin insertions.	Orthopedic surgery.
6.	 Bone Holding Forceps	To hold, stabilize, rotate, reduce and compress bone. To position bone screws and plates.	Orthopedic surgery

	 Bone Reduction Foreps  Farabeuf-Lambotte Bone Holding Forceps		
7.	 Bone Hook	To apply traction to reduce fractures in large bones.	Orthopedic surgery (fractures)
8.	 Dressing/Thumb	To grasp and handle dressing and other material.	General surgery

	Forceps		
9.	 Hemostatic Forceps	To clamp and restrict arteries or tissue, to control the flow of blood.	General surgery
10.	 Hohmann Retractor	To retract, expose or hold back tissue or expose bone.	General surgery Orthopedic surgery Spinal surgery
11.	 Mayo Hegar Needle Holder	To hold and guide suture needles securely for suturing.	All surgery

12.	 Periosteal Elevator	To elevate and dissect bone, tissue and nerves. To clean and scrape bone. To expose fracture sites or bone in other procedures.	Trauma, spinal surgery.
13.	 Super-Cut Scissor	To cut and dissect tissue To cut sutures, clothing and badages.	General surgery
14.	 Tungsten Carbide Needle Holder	To hold and guide suture needles securely for suturing.	All surgery

15.	 Tungsten Carbide Scissor	To cut and dissect tissue To cut suture, clothing, and bandages.	General surgery
16.	 Tissue Forceps	To grasp and handle tissue.	General surgery
17.	 Dissecting Scissor	To dissect tissue	General surgery
18.	 Operating Scissor	To cut suture, gauze and other materials.	General surgery.

19.	 Volkman Finger Retractor	To retract, expose or hold back tissue, muscle, organs or bones.	General surgery Orthopedic surgery
20.	 Bone Curette	To scrape, shape and clean bone	Orthopedic surgery
21	 Bone Cutter	To cut bone or to remove bone spinters.	Orthopedic surgery
22.	 Bone Ronguer	To cut or remove small pieces of tissue or bone.	Orthopedic surgery

23.	 Caroll Tendon Pulling	To retrieve, grasp, hold, cut and separate cartilage and tendon.	Orthopedic surgery
24.	 Cast Spreader	To cut or break bandages, stockinette, drapes, felt, fiberglass, plaster aluminium, and other cast materials.	Casting room
25.	 Chisels	To cut a window in the bone cortex to allow harvestig of pure soft bone.	Orthopedic surgery

26.	 Foman Rasp, Double Ended	To smooth, sculpt and clean bone.	Orthopedic surgery
27.	 Gigli Saw Handle and Blade	To cut bone, example in amputations.	Orthopedic surgery
28.	 Gouge	To scoop away strips of soft bone, especially in bone grafting.	Orthopedic surgery

29.	 Hexagonal screwdriver	To place and remove bone screws.	Orthopedic surgery
30.	 Osteotome	To shape and sculpt bone.	Orthopedic surgery
31.	 Large Pin Cutter	To cut wires and pins.	Orthopedic surgery
32.		To wedge bone graft into place	Orthopedic surgery

	Bone Tamp		
33.	 Ralks Drill	To insert wires, guide wires, pins and rod.	Orthopedic surgery
34.	 Mallet	To exert force on bones, chisels, gauzes, etc. To drive the instruments for inserting nails into the medullary canal.	Orthopedic surgery

35.	 Depth Gauges	To determine screw length required during internal fracture fixation.	Orthopedic surgery
36.	 Spinal Ronguers	To grasp or excise tissue, degenerated disc material or bone during spinal and neurological procedure.	Spinal surgery Neurosurgery
37.	 Trephine	For bone biopsy and also used to remove broken screws.	Orthopedic surgery

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CHAPTER III
DISEASES

Before there were humans on earth, diseases have existed in early animals. According to Mohan (2010: 1) disease is opposite of health i.e. what is not healthy is disease. Then, in this chapter will be discussed about the three diseases caused by virus, bacteria and fungi.

A. Diseases Caused By Virus

Brooks and his friends (2013: 407) viruses are the smallest infectious agents (ranging from about 20 nm to 300 nm in diameter) and contain only one kind of nucleic acid (DNA or RNA) as their genome. Meanwhile, a disease is caused by virus named as viral disease.

The study of virus is called as virology. The table below shows the diseases caused by virus with their symptoms:

Name of Disease	Name of Virus (Pathogen)	Symptoms
Chicken Pox	Varicella	- There may be sore throat and fever, a rash of red spot which are initially flat and become slightly raised then they form tiny blisters and may itch.
Measles	Rubeolla virus	- Rash made up flat spots on face and neck then spreading to trunk, followed by fever or high fever, eyes may become red and be accompanied by runny nose and sore throat.
Poliomyelitis	Polio virus	- It causes infantile paralysis, stiffness on neck, fever, loss of head support.
Rabies (or called	Rabies virus	- Severe headache, high

hydrophobia)		fever, painful muscles contraction in throat and chest, choking, and fear of water leading to death.
Hepatitis A/B/C	Hepatitis virus	- Bodyache, loss of appetite, nausea, yellowish eyes and skin, and deep yellow urine and enlarged liver.
Influenza a. Bird Flu	Influenza type A / H5N1 virus	- High fever, cough, sore throat, running nose, headache, pain in the muscles and extreme fatigue.
b. Swine Flu	Influenza type A / H1N1 virus	- High fever, cough, sore throat, running nose, headache, pain in the

		muscles and extreme fatigue.
c. SARS/ Severe Acute Respiratory Syndrome.	SARS virus	- High fever up to more 38^0 C, cough, sore throat, running nose, headache, pain in the muscles, extreme fatigue, and asphyxia
d. Influenza	Influenza virus	- Fever, cough, asthma, sneezes, pain in the joints and muscles, body aches , and sore throat.
Dengue a. Dengue fever / break-bone fever	Dengue virus	- Sudden onset of high fever, usually 40 C that may last 4 days or a week, severe headache in the forehead, body aches, pain in the joints and muscles, nausea, vomiting, and pain

		behind the eyes.
b. Dengue hemorrhagic fever	Dengue virus	- Severe and continous pain in abdomen, rashes on the skin, nose bleeding, mouth or internal soft organ, vomiting with/without blood, dry mouth, pale, cold, and feel weakness.
c. Chikungunya	Alphavirus	- Onset of fever, polyarthritis affecting small joints, chills, headache, anorexia, nausea, abdominal pain, rash, petechiae.
d. Common cold	Rhinovirus	- Nasal obstruction, nasal discharge, sneezing, headache, malaise, fatigue, and sore throat.
Pharyngitis / viral sore throat	Adenovirus	- Sore throat, fever, nasal congestion or runny nose, headache, chills,

		and body aches.
Laryngitis or croup	Influenza virus	- Hoarseness, continuously cough or dry cough, fever, nasal congestion, gradual loss of voice, and discomfort when speaking or pain in the throat.
Tracheobronchitis	Parainfluenza/influenza virus	- Severe cough, fever, sore throat, fatigue, nausea, nasal congestion, and sometimes vomiting.
Pneumonia	Influenza virus	- Fever, sharp chest pain, shortness of breathing, sputum cough or blood cough.
Herpes zoster or shingles	Varicella	- Tingling, itching, pain in area of skin, a rash of red spots which turn into fluid-filled

		blisters, fever,
Herpes simplex / cold sore.	HSV-1	- Tingling sensation on the lips, small blister which enlarge and become painful and itchy, then blisters burst and become crusty.
Herpes simplex / Genital herpes	HSV-2	- Painful, fluid-filled blisters, sores, ulcers on or around the genitals, headache, fever, and painful urination.
Infectious Mononucleosis / Glandular fever	Epstein-Barr virus	- Fever, sore throat, swollen tonsils, swollen lymph nodes in the neck, armpits, groin, and extreme tiredness, and also sometimes a rash.
Acquired Immuno Deficiency	Human immunodeficiency	- Fever, weight loss, night

Syndrome (AIDS)	virus	sweats, persistent swollen lymph nodes, persistent diarrhea, and infectious of mouth, gums, and skin.
COVID-19	Coronavirus	- High fever, cough, sore throat, headache, pain in the muscles and extreme fatigue

B. Diseases Caused By Bacteria

Liu (2011: 1) stated that bacteria (singular, bacterium) are small unicellular organisms that are classified taxonomically in the domain Bacteria (or Eubacteria), the kingdom Prokaryotae (or Prokaryota or Monera). We are aware that the earth is a microbial planet that bacteria probably become the first form of life to appear and take the benefit of warn and wet environment.

Human and animals have plentiful normal microorganisms which particularly do not produce the disease, but get a balance that make sure the survival, growth, and propagation of the bacteria and the host. Below are the disease names with its bacterial pathogen and symptoms:

Name of Disease	Name of Bacteria	Symptoms
Tuberculosis	Mycobacterium tuberculosis	- Chest pain, night sweats, anorexia, weight loss, fever, malaise, dyspnea, easy fatigability, mild to severe productive cough, and amphoric breath sounds.
Typhoid	Salmonella typhi	- Continuous fever, headache, tiredness, abdominal pain, constipation, may develop diarrhea, a rash appears on the chest and abdomen.
Cholera	Vibrio cholerae	- Acute diarrhea, muscular cramps,

		loss of minerals through urine, dehydration leads to death.
Diphteria	Cornybacerium diphtereae	- Slight fever, sore throat, and general indisposition, oozing semisolid material in the throat which develops into a tough membrane.
Leprosy	Mycobacterium leprae	- Affects skin, formation of nodules and ulcer, scabs and deformities of fingers and toes, infected areas lose sensation
Plague	Yersinia pestis	- Sudden onset of chills, fever, headache, myalgia, productive cough, and chest pain.
Anthrax	Bacillus anthracis	- Fever, chills, weakness, cough, chest pain, dyspnea, and

		hypotension.
Whooping cough /Pertussis	Bordetella pertussis	- Common cold, cough, vomiting, sometimes nosebleeds, and seizures may occur.
Chancroid	Haemophilus ducreyi	- One or more lesions on the groin, inner thigh or penis, then progress from a reddened area to a small papule, and pustule that ulcerates.
Bacterial meningitis	Streptococcus pneumonia	- Fever, severe headache, nausea, vomiting, sensitivity to bright light, stiff neck, and may appear a purplish-red rash.
Gonorrhoea	Neisseria gonorrhoea	- In men: a discharge of pus from the penis, painful urination, and inflammation of prostate

		- In women: a yellowish-green discharge of pus from the vagina, painful urination, and irregular vagina bleeding
Shigellosis / dysentery	Salmonella dysentriae, salmonella flexneri, salmonella boydi, salmonella sonnei	- Diarrhea, which may be bloody, fever, abdominal pain, and dehydration.
leptospirosis	Leptospira	- Fever, headache, muscle pain, rash, inflammation of the eyes, neck stiffness, and hypotension.
Trachoma / Infectious eye disease	Chlamydia trachomatis	- Discharge from the eye, redness of the white of eye, may appear scar the eyelids, eyelashes turn inward.
Pneumonia	Streptococcus pneumonia	- Fever, pleuritic chest pain, shortness of

		breath, cough which produces sputum, and decreased breath sound.
Food poisoning	Salmonella, Campylobacter, E. Coli, Staphylococcus, etc.	- Nausea, vomiting, diarrhea, and abdominal cramps.
Gastritis	Helicobacter pylori	- Upper abdominal pain and nausea
Stomach ulcer / Peptic ulcer	Helicobacter pylori	- Upper abdominal pain, loss of appetite, weight loss, nausea, and vomiting (may be blood or black).
Chlamydia infection	Chlamydia trachomatis	- Painful urination, discharge from vagina (women) / penis (men) and rectum.
Scarlet fever	Streptococcus	- Rash on the neck and upper body, fever, sore throat, headache, vomiting, and swollen glands in

		the neck.
Tetanus	Clostridium tetani	- Stiff jaw muscles / lockjaw, fever, fast pulse, and sweating.

C. Diseases Caused By Fungi

Brock (2006: 8) stated that a fungus is an organism made up of eukaryotic cells that have a cell wall containing chitin. It can be summarized that fungi (plural form) are not plant, so that they are heterotrophic organism which are simpler in structure than animals and plants.

Fungal infections are called as mycoses and the study of fungi is called as mycology. The table below describes the diseases caused by fungi with their symptoms:

Disease Name	**Name of Fungi**	**Symptoms**
Histoplasmosis	Histoplasmosis capsulatum	Fever, anorexia, emaciation, jaundice, anemia, weakness, fatigue, pallor, palate, epiglottis,

		ulcerated larynx, hoarseness, and dysphagia.
Mycetoma / Madura foot	Madurella mycetomatis	Painless masses under the skin, collared grains.
Candidiasis / Yeast infection	Candida albicans	Men: rash, itching, burning under the foreskin, painful urination, and red dermatitis around penis and thigh. Women: itching of vulva and vagina, white discharge and painful urination.
Tinea pedis / Athlete's foot	Trichophyon Mentagrophytes, T. Rubrum, T. Tonsurans	Cracked, soar, itchy, soggy, and brittle.
Tinea Capitis / Scalp	Tricophyton Mentagrophytes, T.	Itchy, scaly patches of hair loss on the

Ringworm	Rubrum, etc.	scalp.
Tinea Cruris / Jock Itch	Tricophyton Mentagrophytes, T. Rubrum, Epidermophyton floccosum.	Reddened, itchy, flaky patch which spreads from the genitals over the inside of thigh or groin.
Tinea Corporis	Tricophyton Rubrum	Itchy, red or silvery ring on the skin of the body.
Tinea Versicolor	Malassezia Furfur	Superficial scaly papules, and circular plaques of varying color such as white, pink, and brown on the neck, shoulders and back.
Onychomycosis / Fungi Nail Infection	Tricophyton Rubrum, T. Digitale	Discolored nail, thickened, distorted, brittle and pain when wearing shoes.

Otitis Externa	Aspergillus Niger	Temporary hearing loss, swelling, discharge of pus from the ear, and itchiness or pain in the canal of ear.
Blastomycosis	Blastomyces dermatidis	Face, Hand, Wrists, and Feet: Painless, nonpruritic macules or papules which can enlarge to well-circumscribed, crusted, ulcerated lesions Pulmonary: chest pain, dry cough with occasional hemoptysis.

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CHAPTER IV
HOME REMEDIES

Wolfe (1999: 4), an herb is a plant with a fleshy stem that usually has some type of medicinal value and can also be used as a food or a spice. As a food or a spice, an herb can be found in anywhere as easy as we can, for example at our home. It can be found in the refrigerator or mainly in the kitchen. Based on that, it can be called as home remedies.

According to Pursell (2015: 13), herbs have three main functions such as herbs help the body eliminate waste, promote healing and increase overall energy in the body. You can make effective herbal remedies at home if you know how to cook. Otherwise, if you are a novice in cooking, you are still able to make great herbal remedies. Making home remedies is easy, fun, simple and the quality of products you can make is as good as that of any product you can purchase, when you have learned a few basic steps. The table below show the name of herbal medicine which you can find easily at your home with the scientific name and key actions:

Name of Herbal Medicines	Scientific Name	Key Actions
Aloe Vera	Aloe Barbadensis	- Heals sunburn and wounds, emollient, eases constipation, exhibits antifungal, antibacterial and antiviral activity, and also stimulates secretion of bile.
Garlic	Allium Sativum	- Antibiotic, lowering blood pressure, expectorant, anti-diabetic, reduce blood clotting, and anti-thrombotic activity.
Ginger	Zingiber Officinale	- Antiviral, anti-inflammatory, antiemetic, circulatory stimulant, and digestive stimulant.
Celery	Avium Grapeolens	- Anti-rheumatic, anti-inflammatory, antispasmodic, mild diuretic, urinary antiseptic, and lowering blood

		pressure.
Calendula	Calendula Officinalis	- Antiseptic, anti-inflammatory, antimicrobial, heals wounds, relieves muscle spasms, prevents hemorrhaging, and detoxifying.
Cayenne Pepper / Chili	Capsicum Annum	- Stimulates circulation, assists in digestion, increases sweating, relieves muscle spasms.
Chamomile	Matricaria Recutita	- Anti-inflammatory, anti-fever agents, antiallergenic, and antispasmodic.
Cinnamon	Cinammomum verum	- Antispasmodic, antidiarrheal, antimicrobial, boosts vitality, anti-diabetic, antifungal, and warming stimulant.
Saffron	Crocus Sativa	- Antitumor effect, antidepressant, antispasmodic,

		aphrodisiac, stomach tonic, and expectorant.
Clove	Eugenia Caryophyllata	- Antiseptic, analgesic, antispasmodic, carminative, destroy parasites, prevents vomiting, and stimulant.
Licorice	Glycyrrhiza Gabra	- Adrenal agent, anti-inflammatory, demulcent, expectorant, and mild laxative.
Lavender	Lavandula Officinalis	- Antibacterial, antifungal, antiseptic, antidepressant, antispasmodic, relieves anxiety, and makes relax.
Peppermint	Mentha x Piperita	- Antimicrobial, antispasmodic, analgesic, carminative, and stimulates sweating.
Lemon Balm	Melissa Officinalis	- Antispasmodic, antiviral, carminative, increases sweating,

		and relaxant.
Aniseed	Pimpinella Anisum	- Antibacterial, antifungal, antioxidant, carminative, expectorant and stimulant.
Eucalyptus	Eucalyptus Globulus	- Analgesic, antiseptic, expectorant, insect repellent, and stimulant local blood flow.
Tea Tree	Melaleuca Alternifolia	- Antibacterial, antifungal, antiseptic, antiviral, and immune stimulant.
Tea Leaf	Camellia Sinensis	- Antioxidant, astringent, diuretic, and stimulant.
Rosemary	Rosmarinus Officinalis	- Anti-inflammatory, antioxidant, astringent, stimulant and tonic.
Thyme	Thymus Vulgaris	- Antioxidant, antiseptic, expectorant, expel worms, relieves muscle spasms and

		tonic.
Coffee	Coffea Arabica	- Diuretic and stimulant.
Turmeric	Curcuma Longa	- Anti-inflammatory, antibacterial, antioxidant, protects liver, and stimulant.
Lemon	Citrus Lemon	- Antibacterial, antioxidant, anti-rheumatic, antiseptic and reduces fever.
Ginkgo	Ginkgo Biloba	- Anti-allergenic, anti-asthmatic, anti-inflammatory, antispasmodic, and circulatory tonic.
Green Tea Leaf	Camellia Sinensis	- Antioxidant, chemopreventative effects, improvement of mental processes, and stops tooth decay.
Pumpkin Seed	Cucurbita Pepo	- Demulcent, deworming agent, diuretic, and

		hormonal agent.
Shiitake	Lentinus Edodes	- Antitumor, antiviral, immune-enhancing, and protects liver.
Blackcurrant	Ribes Nigrum	- Anti-inflammatory, antioxidant, astringent and diuretic.
Cacao / Chocolate	Theobroma Cacao	- Antioxidant, diuretic, mild bitter, nutritive and stimulant.

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