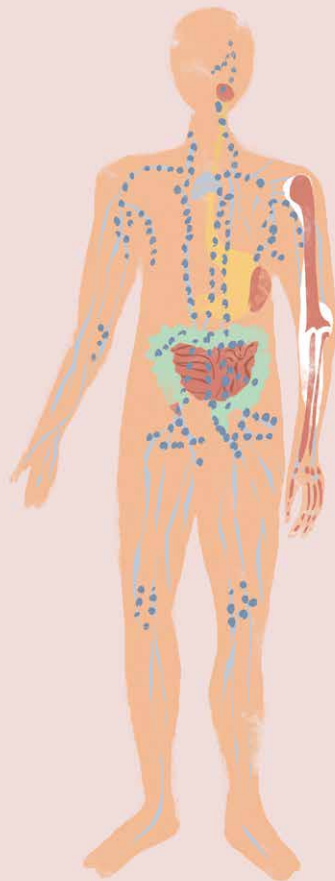


05

IMMUNE SYSTEM & LYMPHATIC SYSTEM

HOLISTIC NUTRITION COACH
Raw Vegan Focus



Contents

Immune System & Lymphatic System	7
1 The Immune System	8
2 Innate Immune Response	10
2.1 Mechanically physiological barriers	10
Skin and mucous membrane associated immune system	10
Antimicrobial defense	11
2.2 Humoral defense	11
Complement system	12
Acute phase proteins	12
Interferons	12
Lysozyme	12
2.3 Cellular defense	13
Monocytes and macrophages	13
Granulocytes	13
Natural killer cells	14
3 Acquired Immune Response	15
3.1 Cellular defense	16
B-Lymphocytes	16
T-Lymphocytes	16
3.2 Humoral defense	17
4 Immune Reaction	18
4.1 First contact with a pathogen	18
4.2 Repeated contact with a pathogen	19
5 Psychological Immune Factors	20
6 Symptoms of Immune Defense	21
6.1 Inflammation	21
6.2 Fever	21

The contents of these training materials were researched and prepared with the utmost care. However, we assume no legal liability for any remaining errors or resulting consequences. The information and advice provided in the training materials does not substitute for medical advice, and every trial is the individual's responsibility to decide and at their own risk.

1st Edition 2023

© Your Nutrition Academy, Jürgen Eder, Landsberg am Lech, 86899, Germany

All rights reserved. Reproduction, in whole or in part, and the distribution of any kind may only be made with written permission. The copyright of all contents such as text, graphics and images of these training materials are owned exclusively by „Deine Ernährung“ in Landsberg 86899.

Cover Image, Layout and Design:
Tanita Schneider

A Project of:
Deine Ernährung
Johann-Mutter-Str. 23
86899 Landsberg
www.your-nutrition.com

7 Vaccination	22
8 Allergy and Autoimmune Disease	23
8.1 Allergy	23
8.2 Autoimmune disease	24
9 The Lymphatic System	26
9.1 The lymphatic vascular system	26
The lymphatic vessels	26
The lymph	28
9.2 The lymphatic organs	29
The bone marrow	29
The thymus gland	29
The lymph nodes	30
The spleen	30
The tonsils	30
The lymphoid tissue in the gut (GALT)	31
The appendix	32
10 Holistic Measures for a Healthy Immune and Lymphatic System	33
10.1 Support of the detoxification processes	33
10.2 Support of the skin and mucous membranes	34
10.3 Supporting positive mental health	35
11 Questions to Check your Learning Progress	36
12 Bibliography	37

Immune System & Lymphatic System

FIFTH LESSON

The immune system, with its many ways of warding off invaders, is closely linked to the lymphatic system, the lymphatic organs, and its purifying and clarifying functions.

Right at the beginning of the second module, we really get down to business, because we look at the sophisticated system for warding off pathogens.

The Immune System

The immune system could also be called our “guardian of health”. The work of this system is always associated with a detoxifying process and can be positively influenced by an appropriate diet. In the fifth lesson, we’ll immerse ourselves in the two immune systems of our bodies, the innate and the acquired. We’ll learn what happens when foreign pathogens invade our bodies.

The Lymphatic System

The heart of our immune system is the lymphatic system. It’s not a single organ, but runs as a network of lymphatic organs and lymphatic vessels throughout the body.

We’ll look at its details and finally discuss some holistic measures for a healthy immune system.

1 The Immune System

The immune system (Latin *immunis*, meaning untouched and pure) is called the biological defense system of humans. It should keep the organism clean and protect it from as many harmful influences as possible.

Harmful effects in the biological sense include:

- Foreign substances such as chemicals or toxins
- Free radicals
- Pathogens such as viruses, bacteria, fungi and parasites
- The body's own cells that need to be broken down because they have become inoperative (old cells, malfunctioning cells as well as cancerous cells).

The immune system must always be able to distinguish between beneficial and harmful invaders. These are both foods and substances that are important for maintaining bodily functions, as well as foreign substances or pathogens, such as harmful bacteria and viruses that must be recognized. This is a big challenge and if anything goes wrong it can have very serious consequences. Examples include allergic overreactions of the immune system or autoimmune diseases such as diabetes and arthritis, where the immune system incorrectly detects, friend or foe, leading to the destruction of useful endogenous substance.

We can also compare the immune system with a highly complex detoxification system, which ensures cleanliness under all circumstances. If pathogens enter the body, they must be rendered harmless by the immune system.

In essence, the mechanisms of the immune system can be divided into:

- Innate immune response
- Acquired immune response

IMMUNE SYSTEM	
Innate Immune Response	Acquired Immune Response
Mechanical-Physiological Barrier: - Skin - Mucous Membrane - Antimicrobial Defense	Cellular Defense: - B-Lymphocytes - T-Lymphocytes
Humoral Defense: - Complement System - Acute-Phase-Proteins - Interferons - Lysozyme	Humoral Defense: - Antibody
Cellular defense: - Macrophages - Granulocytes - Killer cells	

2 Innate Immune Response

The innate immune response is often referred to as a natural or nonspecific immune system. As the name suggests, these mechanisms of the immune system are innate, that is, they are basic functions that don't adapt over the lifetime. The innate immune response is not specialized in certain pathogens and reacts very quickly. It's subsequently subdivided into two mechanically physiological barriers, the humoral defense and cellular defense.

2.1 Mechanically physiological barriers

Skin and mucous membrane associated immune system

The skin and mucous membranes are the body parts that are in constant contact with the outside world and external influences and are thus permanently exposed to possible pathogens and toxins. The main task of the skin and mucous membrane is therefore to keep these dangers away from the body.

The outer skin

The outer skin has a total surface area of approx. 20ft² (1.5 to 2m²) and serves as a first mechanical barrier against the penetration of harmful influences as well as pathogens and toxins.

The mucous membranes

The mucous membranes form - as the name implies - mucus, which is supposed to bind invading foreign matter. This works very well because pathogens and poisons are often on carriers, such as water particles, which are intercepted by the mucous membranes.

With a size of about 10ft² (1m²), the mucous membranes of the respiratory tract in the nose, throat, neck and eyes represent a first obstacle for pathogens in air. The deeply branched bronchi, which cover a surface of as much as 1,000ft² (100m²), protect the respiratory organs.

Mucous membranes exist to a large extent in the digestive tract. Starting with the mouth, followed by the esophagus and stomach, all the way to the intestinal tract, everything is lined with mucous membranes. They're confronted with various pathogens on a daily basis.

The intestine is very important for the immune system

Over 100 trillion bacteria live in the intestinal flora. If the intestinal flora is intact, the beneficial intestinal bacteria outweigh the pathogenic bacteria, fungi or pathogens that enter the body via food (for more information, see Lesson 10, Chapter 5.4).

The defensive activity of the intestinal flora supports the immune cells in the intestinal mucosa, which make up about 80% of the immune system (see Lesson 5, Chapter 9.2).

The urinary tract and genitalia also contain mucous membranes to protect against pathogens.

Antimicrobial defense

Antimicrobial peptides and proteins are found in the different body fluids. They're used for unspecific defense against bacteria and fungi, for example in saliva, stomach acid, bile or the intestinal mucosa.

End of Sample Lesson

12 Bibliography

- Carlson Judith. DR. SEBI BIBLE: 14 in 1: The Ultimate Guide To Detox and Cleanse Your Body Naturally While Boosting Your Immune System. Live a Disease-Free Life With Dr. Sebi's Approved Alkaline Remedies & Methods. Independently published 2022
- Clement, Brian. Food is Medicine, Volume One: The Scientific Evidence. (1. Edition) Hippocrates Publications 2012
- Hruska, Elaine. Your Key to Good Health: Unlocking the Power of Your Lymphatic System (1. Auflage) A.R.E. Press 2008
- Murphy, K., Weaver C.. Janeway's Immunobiology (9. Edition) Garland Science 2016
- Mutter, Joachim. Eat Green!: The Health Revolution On Your Plate (1. Edition) VAK Verlag 2017
- Price, Weston Andrew. Nutrition and Physical Degeneration (8. Edition) Price-Pottenger Nutrition Foundation 2009
- Quick Study Academic. Lymphatic System (Illustrated Edition) 2016
- Sompayrac Lauren M.. How the Immune System Works (6. Edition) Wiley-Blackwell 2019
- Switzer, John. Dr. Switzer's Wild Plant Primal Diet. (1. Edition)) Ayurveda Healthy & Beauty Verlag 2015
- Welsh Charles. ISE Hole's Essentials of Human Anatomy & Physiology (14. Edition) McGraw-Hill Education 2020

