

Fundamentals of Immunity

What is the immune system?

The immune system is a term used to describe the collection of organs & physiological processes which work together to protect your body from infections, and ensure it can support recovery from illness.



Your Immunity has two parts

Natural Immunity

Almost everyone has this kind of general immunity which includes:



Physical barriers: (e.g. Skin) that prevent harmful micro-organisms, allergens or toxins from entering the body.



Microbiome: bacteria that live on our physical barriers which compete with & destroy harmful micro-organisms.



'Patrol' White Blood Cells (WBC): types of WBCs which roam around the body looking for foreign substances or pathogens to destroy. They can also trigger inflammatory or allergic responses.

Acquired Immunity

This kind of immunity is developed based on what you are exposed to i.e. it is 'acquired' over time to help your immune system to develop a 'memory' enabling it to respond better to threats. It is made up of specialised WBCs which can create antibodies and recognise particular antigens.

Key Definitions



Antibodies (Immunoglobulins): protein 'flags' produced by WBCs which bind to antigens, to help the body identify foreign substances.



Cytokine: chemical messengers used by the immune system to communicate



Antigen: Chemical components from undesirable or harmful foreign substances in the body; can include allergens, toxins, viruses or harmful micro-organisms. These are recognised by antibodies.



Pathogen: bacteria, viruses or fungi that can cause disease.

Did you know?

Your immune system never 'switches off'. It is always working, and 'evolves' over time to protect you from different threats.



Immunity is about balance...

If it is **underactive** you could suffer from illness.



If **overactive** you could be at risk of allergies, autoimmune disease and chronic inflammation.

What can influence your level of immunity?



STRESS



AGE



MEDICATION



DIET



SMOKING
& DRUGS



EXERCISE



SLEEP



PREVIOUS
INFECTION



HYGIENE



GENETICS

Nutrition plays a key role



Amino acids from protein are needed to build immune cells or molecules that are critical to immune response e.g. antibodies or cytokines.

Immune cells use **sugars** and **fats** as fuel.



Some **vitamins** (e.g. B6) & **minerals** (e.g. Zinc) help immune cells create energy, mature and respond to threats.



Antioxidants help to 'stop' free radicals which can damage your cells.



High **fibre** foods, **prebiotics** (e.g. Galactooligosaccharides) and **probiotics** can influence the gut microbiome.

Conclusion

Eating a healthy diet is critical to ensure the body has the right nutrients for a strong immune system.

Creating products that can support the immune system, requires the right ingredients to deliver on nutrition.



Talk to the dairy ingredient experts

We're passionate about sharing our deep dairy expertise to help you grow your business. Talk to us today about your dairy ingredient needs.

To find out more please contact your account manager or visit nzmp.com