



# The responsive immune system



## INNATE IMMUNE SYSTEM

The body's first line of defence involving barriers (e.g. the lining of the nose and throat) and immune cells that respond to pathogens non-specifically.



## ADAPTIVE IMMUNE SYSTEM

Recognition of previously encountered pathogens, generating targeted responses for long-term immunity involving lymphocytes and antibodies.



## IMMUNOMODULATION

The regulation of the immune response to maintain an appropriate reaction to immune challenges.



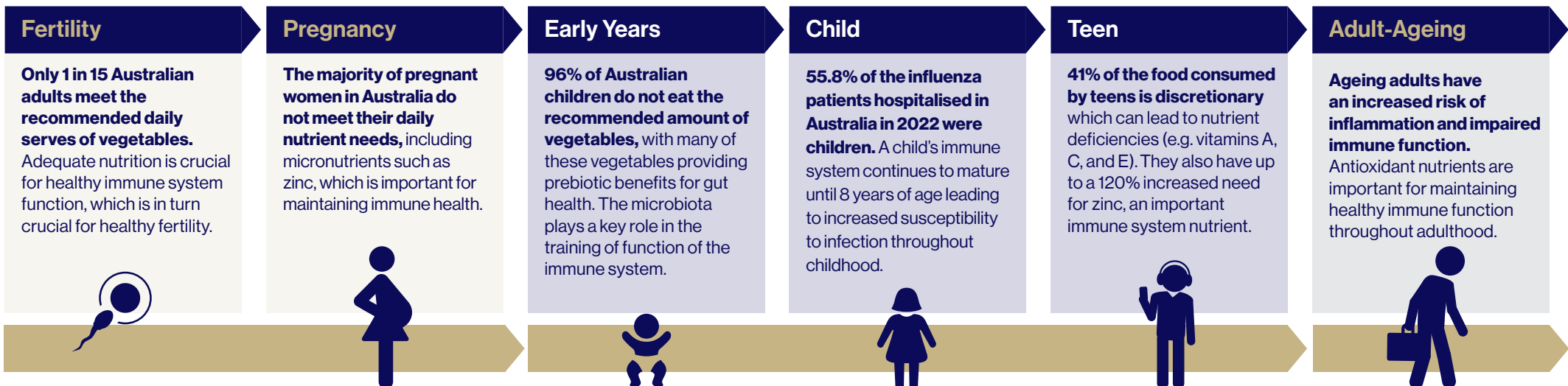
## Importance of the microbiome

The microbiome contributes to immune system development, regulation, and defence via its influence over immune cell function and antimicrobial substance production.

Dysbiosis, a disruption to microbial balance, can impact healthy immune system function and lead to increased susceptibility to infections, autoimmune disorders, and allergies.

**A healthy microbiome supports optimal immune function and overall wellbeing.**

## Changing demands on the immune system across the lifespan



# Supporting immunity across the lifespan

	ACTION	PREGNANCY	CHILDHOOD	ADULT	NOTES
<b>AP-Bio® Andrographis</b>	Andrographis exhibits anti-inflammatory, antiviral, antimicrobial, and antioxidant effects and has a statistically significant effect on the symptoms of acute respiratory tract infections.	<b>NO</b>	<b>NO</b> – consider black elder instead	<b>YES</b> – 62.5 mg andrographalides/day	
<b>Astragalus</b>	Astragalus promotes an effective immune response by supporting T-cell numbers, lymphocyte activity, enhancing vitality, and supporting the body to adapt to stress.	<b>NO</b>	<b>NO</b> – consider black elder and echinacea	<b>YES</b> – 800 mg/day	
<b>Echinacea</b>	Echinacea modulates the immune response via immune cell activation and provides antiviral, antibacterial, antioxidant, and anti-inflammatory benefits.	<b>NO</b> – consider lactoferrin instead	<b>YES</b> – 300 mg/day	<b>YES</b> – 750 mg/day	
<b>Prebiotics &amp; Probiotics</b>	Probiotics regulate both the innate and adaptive immune response via their ability to modulate dendritic cell, macrophage, and T and B lymphocyte action.	<b>YES</b>	<b>YES</b>	<b>YES</b>	
<b>Quercetin</b>	Quercetin is an antioxidant, anti-allergy, and anti-inflammatory agent with a broad range of antiviral and immunomodulatory activities including mast cell stabilisation. Quercetin also encourages the uptake of zinc into body cells.	<b>NO</b>	<b>YES</b> – 200 mg/day	<b>YES</b> – 1.8 g/day	
<b>Vitamin A</b>	Vitamin A is integral for strong immune barriers, as well as immune system regulation, and the adaptive immune response.	<b>CAUTION</b> – consider beta carotene*	<b>YES</b> – 150 micrograms/day	<b>YES</b> – 450 micrograms/day RE	
<b>Vitamin C</b>	Vitamin C is a well-known antioxidant which enhances multiple aspects of immune function. Vitamin C appears to be able to both prevent and treat respiratory and systemic infections.	<b>YES</b> – 500 mg/day	<b>YES</b> – 40–80 mg/day	<b>YES</b> – 2.2 g/day	
<b>Vitamin D</b>	Vitamin D is required for the expression, development, and proper functioning of multiple immune cells. Vitamin D deficiency has been linked to increased incidence of infectious disease.	<b>YES</b> – 1000 IU/day	<b>YES</b> – 400–1000 IU/day	<b>YES</b> – 1000 IU/day	
<b>Wellmune®</b>	Wellmune® is a yeast beta glucan derived from the cell wall of <i>Saccharomyces cerevisiae</i> that demonstrates immunomodulatory activity. Yeast beta glucans show promise as immune 'trainers' supporting the body to act effectively to invading pathogens.	<b>NO</b> – consider lactoferrin instead	<b>YES</b> – 100 mg/day	<b>YES</b> – 250 mg/day	
<b>Zinc</b>	Zinc can be used to both prevent and treat acute infections. Zinc strengthens the mucosal barriers of the respiratory tract, supports immune cell function, suppresses viral replication, and provides antioxidant benefits.	<b>YES</b> – 20 mg/day	<b>YES</b> – 5 mg/day	<b>YES</b> – 30 mg/day	

\*Caution required – when taken in excess of 3000 micrograms retinol equivalents (RE), vitamin A can cause birth defects.

To learn more on key ingredients associated with immune health, visit:  
[www.bioceuticals.com.au/product/ingredient](http://www.bioceuticals.com.au/product/ingredient)

**HAVE QUESTIONS?**  
 Contact our Practitioner Advisory Service:  
[practitionersupport@bioceuticals.com.au](mailto:practitionersupport@bioceuticals.com.au) | 1300 650 455

References upon request  
[www.bioceuticals.com.au](http://www.bioceuticals.com.au)  
 ©BioCeuticals 2024 ACN 062 851 683