

Autoimmune diseases are a group of sinister diseases where the immune system attacks the body that it was designed to protect.

Some of the common autoimmune diseases include:

- Coeliac disease – the immune system reacts to gluten (found in wheat and other grains) and damages the small intestine. Coeliac disease causes flatulence, diarrhoea and abdominal pain.
- Lupus – many parts of the body can be affected, including the skin, muscles, joints, lungs, heart and kidneys.
- Rheumatoid arthritis – bone and cartilage are damaged, causing tender, swollen and stiff joints.
- Graves' disease – the thyroid gland is overactive, causing anxiety, heart palpitations, weight loss and irritated or bulging eyes.
- Hashimoto's disease (thyroiditis) – the immune system attacks the thyroid causing the thyroid gland to be under-active.
- Multiple sclerosis – the nervous system is affected, causing muscle weakness and poor coordination, sight problems and, in some cases, cognitive difficulties.
- Type 1 diabetes – the pancreas does not produce enough insulin to manage blood sugar levels, resulting in thirst, hunger and frequent urination.
- Crohn's disease causes inflammation of the intestines.
- Ulcerative colitis causes inflammation of the lining of the colon and rectum.
- Addison's disease affects the adrenal glands which produce the cortisol, androgen and aldosterone.
- Myasthenia gravis affects nerve impulses that control the muscles.
- Autoimmune vasculitis results in the inflammation of blood vessels causing the narrow arteries and veins to narrow.
- Scleroderma causes an abnormal growth of connective tissue in the skin and blood vessels.

Rheumatoid arthritis usually affects the smaller joints, such as those in the hands, feet and wrists, although larger joints such as the hips and knees can also be affected. According to the Health Direct website, the cause of rheumatoid arthritis is not known.¹

Approximately 2% of Australians have rheumatoid arthritis. People who smoke have a greater prevalence and women are affected 3-4 times more than men. Rheumatoid arthritis often

occurs in association with other conditions. Cardiovascular disease, asthma, diabetes and cancer occurs more frequently in people with rheumatoid arthritis. ²

Seventh-day Adventist studies show a 1.5 times increase in the prevalence of rheumatoid arthritis in non-vegetarian Adventists compared with vegan Adventists. It is important to note that non-vegan Adventists are much healthier than the average American. ³

Molecular mimicry

One mechanism that explains auto-immune conditions is *molecular mimicry*. When intruders invade our bodies, the immune system creates antibodies that mark these intruders (antigens) as a foreign foe. The immune system is then able to destroy the intruders.

During digestion, proteins are broken down into their component amino acids. Some proteins may be absorbed from the intestine without being fully broken down into their amino acid components. Small chains of amino acids are called peptides. These peptides may be treated as a foreign invader by our immune system.

Many proteins are similar over a wide range of both plant and animal species. For example, albumin is the most common soluble protein in the blood of animals. It is also present in egg white. Albumin from different species is slightly altered. There is a strong correlation with the level of antibodies to bovine serum albumin (BSA) in the blood and type 1 diabetes. In 1990s, Finland had the highest incidence of diabetes and cow's milk consumption in the world. Researchers compared levels of incompletely digested cow's milk protein (Bovine Serum Albumin – BSA) in 142 diabetic children. Levels of IgG anti-BSA antibodies were higher than 3.55 RFUs (relative fluorescence units) for the 142 diabetic children whilst each non-diabetic child in the control group of 79 children had levels of less than 3.55. ⁴

There was no overlap of the levels between the two groups of children. All children with diabetes had a higher level of the antibodies (which can only occur from consuming cow's milk) than the group without diabetes.

Significant increases in BSA antibodies in diabetic children have been found in other studies in Finland ⁵ and France. ⁶

There is a specific sequence of 17 amino acids that is found in proteins in cow's milk – but is different in human albumin. The immune system recognizes this sequence as a foreign intruder so antibodies are produced to eliminate the unwanted invaders. Unfortunately, the same 17 amino acid sequence is found on the cells of the pancreas that produce insulin. Consequently, the immune system is unable to distinguish the cow's milk protein fragments from the pancreatic cells. It therefore destroys both which leads to the inability of the pancreas to produce insulin and leads to a life time dependency of insulin injections and their consequences. ⁷

Molecular Mimicry and Rheumatoid Arthritis

Filaggrin is a protein that binds to keratin which is the main component of the outer layer of skin, hair, nails as well as horns, feathers, claws and hoofs. Anti-filaggrin antibodies are a strong indicator of rheumatoid arthritis. Two products that are derived from fibrin are deposited in the rheumatoid membranes that is a target for the anti-filaggrin antibodies. Fibrin is an insoluble protein that forms a network of fine fibres that assist clotting in the event of a cut. The presence of fibrin is greatly increased on an animal-based diet. ^{8 9 10}

Rheumatoid arthritis is strongly associated with urinary tract infections. This is consistent with the observation that rheumatoid arthritis occurs much more frequently in women.

The majority of urinary tract infections are caused by *Escherichia coli* (*E. coli*) bacteria. Bacteria belonging to the *Proteus* genus are the next most prevalent cause of urinary tract infections.

There is evidence that *Proteus* bacteria is also involved with rheumatoid arthritis with the antibodies to the *Proteus* bacteria also attacking collagen. ¹¹

An amino acid sequence in a protein in *Proteus* is similar to a sequence found in collagen. Collagen is the most abundant proteins found in mammals and is the main component of connective tissue. It is found in fibrous tissues such as tendons, ligaments, skin, cartilage and bones as well as other organs. It is cartilage and bones that are affected by rheumatoid arthritis.

There is a close match with human collagen type I as well as C1q and vitamin D binding protein. The following paper concludes that “the possibility of a molecular mimicry mechanism” may exist for rheumatoid arthritis. ¹²

Association with Intestinal Bacteria and Disease

The role of intestinal bacteria and rheumatoid arthritis is well established. ¹³

However, it is well established that microbes in the intestines are essential for the breakdown of complex carbohydrates, the production of short chain fatty acids and synthesis of vitamins. More than 1000 different species have been identified. Despite the vast number of bacteria species and people, there are only two types of bacteriological ecosystems in the gut (enterotypes) – those dominated by *Prevotella* genus bacteria and those by *Bacteroides* genera. Both *Bacteroides* and *Prevotella* belong to Bacteroidetes phylum. Enterotypes were strongly associated with long-term diets, particularly protein and animal fat (*Bacteroides*) versus carbohydrates (*Prevotella*). Microbiome composition changed within 24 hours of initiating a high-fat/low-fiber or low-fat/high-fiber diet. However, it takes a longer period of time to change the enterotype from one state to the other. ¹⁴

Gut bacteria dominated by *Prevotella* are associated with healthier outcomes. ^{15 16 17 18 19 20 21}

A history of urinary tract infection significantly elevates the risk of bladder cancer. ²²

The table below shows the SIR (Standardised Infection Ratio) for a number of conditions and their associated infecting organism. The SIR compares the observed number of infections with the expected number of infections. ²³

Yes—*Yersinia* is associated with a 47 times (it is not a percentage increase) increase in the rate of reactive arthropathy conditions (arthropathy refers to a disease of the joints) and *Salmonella* an 18 times increase.

Disease	Infecting Organism	SIR
Digestive system diseases		
Crohn's disease	Campylobacter spp	1.6
	Salmonella spp	1.4
Ulcerative colitis	Campylobacter spp	2.8
	Salmonella spp	3.2
	Yersinia spp	2.9
Other non-infective gastroenteritis and colitis	Campylobacter spp	2.5
	Salmonella spp	3.3
	Yersinia spp	7.6
Irritable bowel syndrome	Campylobacter spp	3.0
	Yersinia spp	7.8
Intestinal malabsorption	Salmonella spp	1.7
	Yersinia spp	7.9
Musculoskeletal system diseases		
Reactive arthropathies (reactive diseases of joint)	Campylobacter spp	6.3
	Salmonella spp	18.2
	Shigella spp	13.4
	Yersinia spp	47.0
Rheumatoid arthritis	E. coli	5.8
	Yersinia spp	2.0
Other systemic involvement of connective tissue (Sjögren syndrome, mixed connective tissue disease, polymyalgia heumatica)	Campylobacter spp	2.4
	Salmonella spp	1.3

- *Yersinia* is strongly associated with pork. It is associated with over 95,000 acute cases annually in the US with 30 deaths.
- *Salmonella* occurs from contamination of food or water or hands with eggs, milk, meat or poultry being high risk foods. There are an estimated 1 million cases annually in the US with over 300 deaths.
- *Campylobacter* is one of the most common causes of gastroenteritis and is frequently associated with the consumption of poultry. It is associated with over 800,000 acute

cases annually in the US with 70 deaths.

- *Shigella* is only found in primates. It is associated with over 130,000 acute cases annually in the US with 10 deaths.²⁴

A 1989 survey of over one thousand arthritis patients revealed that the foods most commonly believed to worsen the condition were red meat, sugar, fats, salt, caffeine, and nightshade plants (e.g., tomatoes, eggplant).²⁵

Note that this survey from 1989 did not identify wheat or gluten as a food that was thought to be associated with arthritis.

Strategies to Assist with Arthritis

The page below provides suggestions that can assist with mitigating or even alleviating problems associated with arthritis.

[Strategies to Assist with Arthritis](#)

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[Rheumatoid Arthritis and Fibrin](#)

[Autoimmune diseases and Biomimicry](#)

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Footnotes

1. Health Direct Australia (2017) *Rheumatoid arthritis* | *Health Direct* [online]. Available from: <https://www.healthdirect.gov.au/rheumatoid-arthritis> (Accessed 4 February 2018).
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