

MAP & Crohn's disease

For 20 years there has been debate about a possible association between *Mycobacterium avium* subspecies *paratuberculosis* (MAP) and Crohn's disease in humans. This hypothesis has been reviewed and investigated by a number of Food Safety Authorities – United Kingdom, Ireland and the European Union. All have reported the evidence for MAP being a causative agent for Crohn's disease is inconclusive.

In animals, MAP is responsible for an intestinal illness known as Johne's disease. This is a chronic inflammatory disease affecting cattle, deer and sheep. It has been reported in livestock in many countries. Some wild animals such as rabbits and ferrets can also become infected with MAP and show similar intestinal changes.

Due to some similarities between Johne's and Crohn's disease, MAP has been the subject of numerous studies to determine whether a link could be established. MAP has been identified in some Crohn's disease patients but this is not a consistent finding. MAP or evidence of MAP, has also been reported in people not suffering from Crohn's disease. It is possible that MAP is an opportunistic invader, similar to other bacteria found in the bowel such as *E.coli*. There is insufficient scientific evidence to prove a link between Johne's disease (or MAP) in animals and Crohn's disease in humans.

What is *Mycobacterium avium* subspecies *paratuberculosis* (MAP)?

Mycobacterium avium subspecies *paratuberculosis* (MAP) is a bacterium that causes Johne's disease in animals. However, it can survive outside the animal for long periods, and there is evidence that it is a common environmental contaminant.

What is Crohn's Disease?

Crohn's is a form of inflammatory bowel disease (IBD) that usually affects the small and large intestine. Symptoms include abdominal pain, diarrhoea, vomiting, fever or weight loss, reduced appetite and fatigue. In some, symptoms can be severe.

The cause of the disease is unknown. Most authorities consider that Crohn's disease is not a single disease entity. It is currently considered to arise from an immune disorder in individuals with a particular genetic makeup and the result is a breakdown in the normal bowel immune function. Genetic predisposition is not considered the sole cause of the disease however, other factors are being investigated.

The development of Crohn's disease may be related to a more modern lifestyle. Crohn's disease appears to be more common in the developed world. Urban rates are generally higher than rural. Data from some areas show this eg, Northern Europe rates are higher than for Southern Europe.

Groups most exposed to MAP, such as dairy farmers and large animal veterinarians, have not been shown to have higher rates of Crohn's disease.

The risk of food containing MAP and the controls in place

In all animals, Johne's disease lesions are generally found in the bowel. As the disease progresses, organisms are shed in faeces.

It is possible for carcasses to become contaminated with MAP from these lesions or through faecal contamination. Likewise, milk can become contaminated via faecal contamination. MAP can be excreted into the milk and colostrum of cows with advanced clinical cases of Johne's disease. There is also evidence that in such animals the organism could spread to other organs.

Good hygienic practice is an integral part of New Zealand's meat processing procedures, including the exclusion of any sick or unhealthy animals. During processing any visible abnormalities that might be caused by MAP would not enter the food chain.

Pasteurisation using properly operated and validated heat treatment equipment has been shown to be effective in ensuring milk does not contain live MAP. Equipment operation standards in New Zealand are among the highest in the world. In New Zealand pasteurised milk must meet the requirements of MAF Food Safety dairy standard D121.1 'Dairy Heat Treatment'.

The dairy industry has been aware of the suggested association between MAP and Crohn's disease for a number of years and this has been, and will continue to be, a topic of interest and consideration. There is no scientific justification for suggesting that milk poses a risk to public health based upon the data currently available.

The food safety control measures in place in New Zealand are appropriate to protect public health. The outcome of on-going research is clearly of interest to us and as such we continue to work closely with international authorities.

New Zealand is an active participant in respected international organisations that consider sound science in establishing recommendations and guidelines for food safety, including the

Codex Alimentarius Commission, World Organisation for Animal Health (OIE), Food Standards Australia New Zealand (FSANZ) and the International Dairy Federation (IDF).

We will consider any new findings and continue to monitor the issue and take any appropriate action to protect public health by ensuring the safety of the food supply.