Coeliac Australia

Oats, Avenin & Coeliac Disease

May 2026

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Introduction

There is growing confusion in Australia about whether oats are suitable for people with coeliac disease. **It is time to bring greater clarity to this issue** and make it easier to identify appropriate products. Historical records show that oats have always been a debated food for people with coeliac disease. When gluten free diets were first introduced in the late 1940s, opinions about oats were mixed. In the 1970s, oats were completely removed from the gluten free diet. This happened when the first official definition of “gluten free” was developed by the World Health Organization and the Food and Agriculture Organization.

Research into oats began again in the 1990s. As scientists learned more about gluten and coeliac disease, advice about oats started to change. A gluten-like protein called AVENIN was shown to cause an immune response in a small number of people with coeliac disease. Europe, Canada, and the United States accepted these changes over 20 years ago, allowing specially-produced oats to be included in a gluten free diet. Australia and New Zealand took a more cautious approach, choosing to wait for stronger scientific evidence to ensure safety.

This brochure has been created as an educational e-book to help you and your healthcare team understand the current position of oats in a gluten free diet for people with coeliac disease.

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Key takeaways

- Under the Australian Food Standards Code – **NO type of oat can be called gluten free**
- Only **specially-produced oats**, which are free of wheat, rye and barley grain cross contact, should be consumed by those with coeliac disease.
  - **Regular brands of oats are NOT suitable**
- Oats are a very nutritious grain that offer a range of health benefits.
- Oats in the gluten-free diet, may improve quality of life scores.
- **AVENIN** is the 'gluten-like protein that is tolerated by the majority of people[1-2] with coeliac disease.
- **Oat AVENIN stimulates a T-cell reaction in <10% of people with coeliac disease[3].**
- There is no current plan to call oats gluten-free in Australia and New Zealand.
- It is a **personal choice** to eat 'pure' oats with a gluten-free diet and life-style.
- **The introduction of 'pure' oats should occur with caution and under collaborative supervision of the healthcare team.**

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Individual choice

Including oats in a gluten-free diet is a personal choice. The role of the healthcare team is to support each individual in determining whether oats can be introduced safely.

Internationally, specially produced (pure) oats are often included in the gluten-free diet, which differs to the approach historically taken in Australia. The toxicity of oats for people with coeliac disease is controversial and has led to differing recommendations as to their suitability as part of a gluten-free diet. In countries that do allow oats, **only those free of gluten contamination ('pure' oats) are recommended for people with coeliac disease**, as standard commercial brands of oats are often contaminated with wheat, rye or barley gluten grains from cross contact at the farming level of production.

Australian and New Zealand food law does not currently allow any type of oat to be labelled 'gluten free'; this remains unchanged.

Coeliac Australia acknowledges that oats provide a range of nutritional benefits, some not found in other gluten-free grains. If people wish to add oats, we recommend they discuss oats with their medical team and follow the individualised advice suggested by their gastroenterologist.

This often involves an oat challenge using only specially produced oats that reduce the gluten cross contact from other gains.

The following is some current information about **specially-produced oats** in a gluten free diet.

The overseas experience suggests pure oats are well tolerated by the majority of people with coeliac disease, but there is a lack of consensus about how patients consuming pure oats should be monitored to confirm tolerance.

As more is learned about oat-avenin reactions and the potential benefits of oats, it is important that members of the Healthcare team have a good understanding of this area. This will allow for meaningful conversations with patients to allow for collaborative decision making.

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Benefits of Oats

Oats are a very nutritious grain that offer a **range of health benefits**[4]. The gluten-free diet commonly lacks fibre and other important nutrients; The addition of uncontaminated (pure) oats to a gluten-free diet can help address these inadequacies.

Along with oats nutritional appeal they have a mild, neutral flavour. This makes them easy to add to many foods and can improve the taste of gluten-free products.

The inclusion of pure oats helps to improve diet quality and variety in the diets of those on a gluten-free diet, with some studies even showing better quality of life scores in patients with coeliac disease who include pure oats[5]. It has also been found overseas that most patients with coeliac disease prefer to include pure oats in their gluten-free diet if possible[2]

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Key Oat Nutrition Facts

Wholegrain

Oats are typically eaten as a whole grain in foods like porridge, biscuits or crumbles. This provides the whole package of fibre, nutrients and other natural plant compounds.

Prebiotic Fibre & Energy

Oats provide carbohydrates that fuel your brain and muscles. They also contain prebiotic fibres which act as food for beneficial bacteria in your gut, helping them grow and thrive[5]. The bacteria produce substances like short chain fatty acids which in turn fuel colon cells, strengthen the gut barrier, reduce inflammation, support the immune system, and may reduce inflammation.

β-Glucans - Fibre

Oats are high in a soluble fibre called β-glucans. This type of fibre can help lower cholesterol levels and improve blood glucose control. It may also support heart health and help keep bowels regular.

Vegetarian Protein

Oats contain around 11-17% protein making them one of the highest protein grains and a useful option for vegetarian and vegan diets. While not a complete protein, oats can contribute to daily protein intake and support muscle repair, especially when combined with other protein-rich foods.

Low Sodium (salt)

Oats are naturally low in sodium

Avenanthramides

Oats almost solely contains this anti-oxidant which may help to lower blood pressure level by widening blood vessels to improve flow.

Iron and B-Vitamins

Iron and B-vitamins are not often supplemented in gluten free foods. Oats provide important nutrients such as thiamine, folate and pyridoxine (B-vitamin), iron, magnesium and phosphorus.

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Pure Oats Tolerance

There is an abundance of research supporting oat safety in the majority of patients with coeliac disease[1,2,6,7]. **Gluten is found in the protein portion** of certain grains.

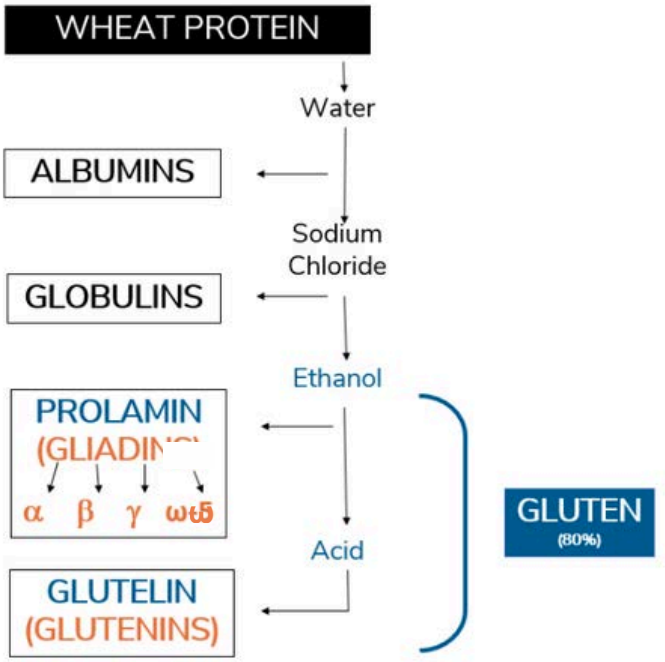
Gluten is not one entity

Cereal grains contain different types of protein, including albumins (water-soluble), globulins (salt-soluble), prolamins (alcohol-soluble), and glutelins. The proportion of these proteins varies between grains. "Gluten" is the name given to the combined prolamin and glutelin proteins.

In wheat, around 80% of the protein is gluten. These proteins are not easily broken down by digestive enzymes in the human gastrointestinal tract. As a result, some protein fragments can trigger an immune response in people with coeliac disease.

Components of gluten, particularly the prolamin known as gliadin, are more strongly associated with damage to the lining of the small intestine.
Oats are different. About 80% of oat protein is globulin, which is generally more easily digested.

The prolamin in oats is called avenin, and its chemical structure does not resemble that of wheat gliadin. For most people with coeliac disease, avenin does NOT trigger the same immune response as wheat gluten.



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Avenin

The prolamin portion of oat gluten is called **AVENIN.**

AVENIN is described as the 'gluten-like-protein' which can trigger a T-cell reaction in **only a small** number of people with coeliac disease.

A T-cell reaction is accompanied by a cytokine chemical release, but this does not always mean that damage to the small intestine has been triggered. Very few studies report villous damage when specially produced oats have been ingested versus regular oats. Oats are tolerated by the majority because they contain very small amounts of **AVENIN**, compared with the very high proportion of gliadin in wheat. The chemical structure of the **AVENIN** protein contains few immune-stimulating molecules. This has a dual outcome:

1.

It allows our own intestinal enzymes to more easily break this protein down and thereby produce less immune-activating proteins; and

2.

The few immune-activating proteins left are clumsy at triggering the immune system, so damage to the villi is rare.

This is why the international consensus is to call oats gluten free and acknowledge that it is the gluten-like protein called **AVENIN**, that affects only a small number of people, in which most seem to get symptoms and or a T-cell reaction or cytokine chemical release. This T-cell response does not mean villous atrophy (damage to the height of the villi that affects the absorption of food nutrients) actually takes place. In fact, research suggests very few people appear to progress to villous damage from pure oats.

Some even conclude it is the cross contact with wheat, rye & barley that has been responsible for the villi damage that has been recorded.[7]

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A small percentage develop inflammation

Most clinical studies suggest contamination-free oats are safe and well tolerated by adults and children with coeliac disease[1,5]. Some studies have shown a minority[3,9] (<10%) of individuals with coeliac disease can develop small intestinal immune reactions to oats (subtle markers of inflammation, raised inflammatory cells, less with villous atrophy) and symptoms to oats.

It is difficult to estimate the true frequency of adverse reactions to oats, whether they be in the small bowel, immune system or as symptom reactions. This is because individuals with coeliac disease who feel sick with oats generally do not take part in oats feeding studies; further, we know that patient self-reports of symptoms can be unreliable when it comes to implicating the cause. These factors make estimates of oats reactions unreliable.

Oat challenge studies and systematic reviews of oat safety in those with coeliac disease generally note a small proportion who 'react', along with some who withdraw from trials. It is important to acknowledge that individual withdrawal from oat challenge studies is not insignificant and may reflect the oat sensitivity seen in some.

Oat tolerance can be re-gained

It is interesting to note that most patients in a recently published Australian[1] oat study gradually gained symptomatic tolerance to oats, the longer they included them in their diet. Using purified oat avenin, a portion of patients in that study were fed the equivalent of 12 bowls of oats for 6 weeks. **Initial T-cell reactions to the oat avenin also dissipated the longer the oats were in the diet.**

TAKE AWAY MESSAGE: Don't give up with initial symptoms when doing an oat challenge, in many they settle with continued exposure.

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Identifying Suitable Oats

The current ELISA based assay used to test for 'gluten' in food is not able to detect the avenin chemistry in oats. When applied to a quantity of oats, it can only detect the cross contamination of gluten from wheat, rye and barley grains.

The Australian food code differs to the regulations in Europe, UK, Canada and the USA, where oats can be marketed as 'gluten free'. More accurately, oats that are labelled 'gluten-free' overseas are oats that are grown or produced in ways to reduce their gluten cross contact with other wheat, rye and barley grains – AND – the residual gluten remaining from cross contact must measure at ≤20 parts per million (ppm) in Europe[16] and Canada[17] or in the USA[18] <20ppm.

Parts per million is a measure of the density of gluten in the end product

- **20ppm = 20mg gluten/ 1 kg of food (ie. 1000g)**
  - **Note that 50g of oats is a regular serving size of oats at breakfast**

Australia has no such guideline in place that mandates an upper limit of gluten cross-contamination in oats marketed here, as suitable for the gluten-free diet.

Food Standards Australia New Zealand (FSANZ) prohibits the use of a 'gluten free' claim on oat containing products. **At this stage there is no suggestion that the current food code be amended to allow oats to be labelled 'gluten free' in Australia.**

There is also no legislation in Australia and New Zealand authorising what uncontaminated oats should be called. This makes it difficult for consumers to confidently identify oats that have been specially produced to be free of wheat, rye and barley contamination (i.e. pure oats).

Some terminologies used in Australia include 'wheat free', 'uncontaminated', 'pure', and occasionally 'low gluten'. However, the terminology is used inconsistently, leading to ambiguity and confusion. For example, 'wheat free' may be used on a product where rye and/or barley contamination may still be an issue. That type of product is not suitable for someone with coeliac disease.

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Producing Suitable Oats

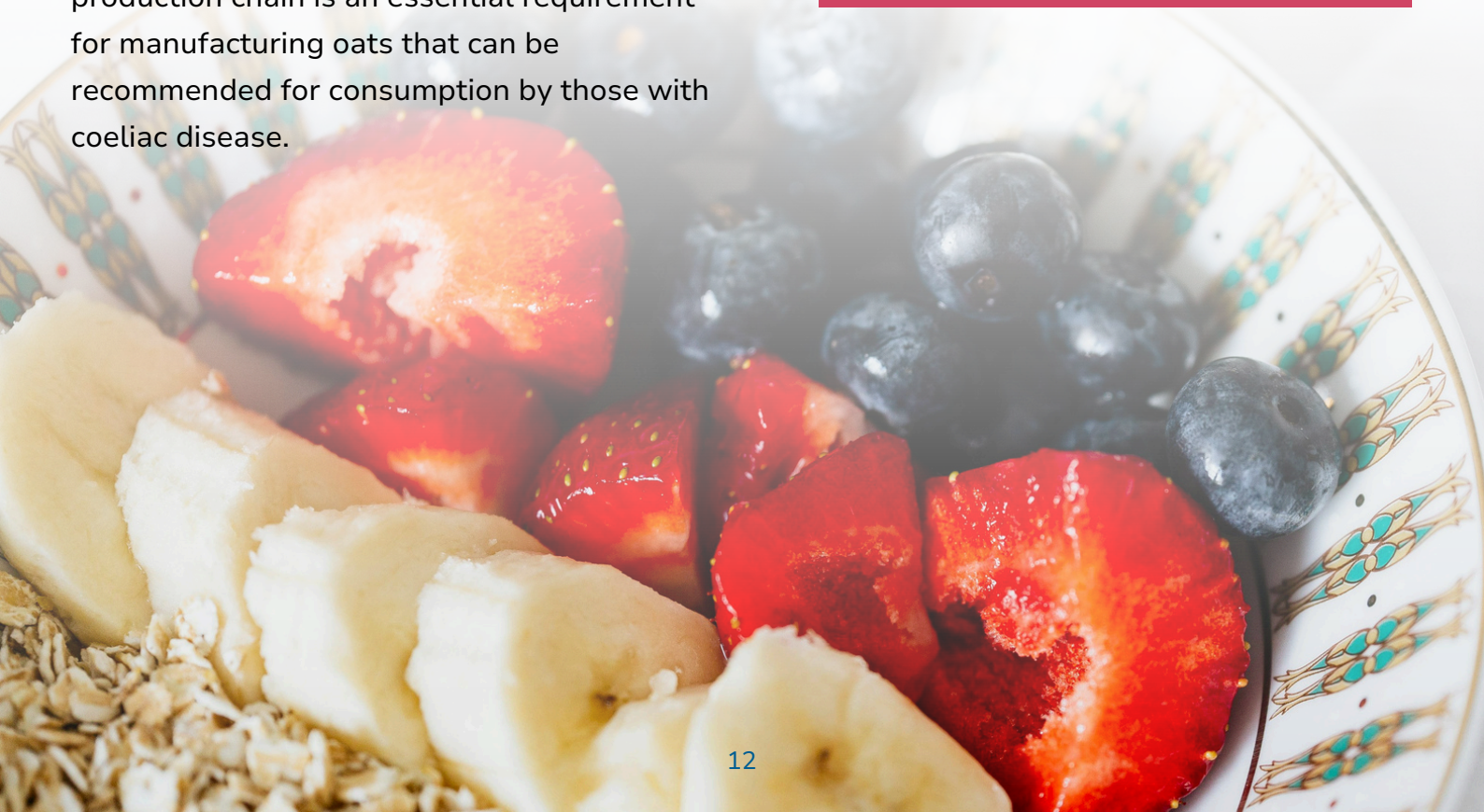
In Australia there is an absence of guidelines or legislation to standardise the production of pure oats to ensure the risk of cross contact with wheat, rye and barley is managed.

Commercially produced oats are commonly grown in rotation with gluten-containing cereal crops. This can see either wheat, barley, or rye plants sprout up in the middle of the oat fields. Contamination also occurs later in the food production chain during harvest with shared combines, storage in shared silos, transport and further processing and packaging of the oats. This means there is a risk of cross-contact with other grains at all stages of production.

Different studies show that regularly produced oats could contain up to 400 ppm[6] or 23-1807ppm[10] or 28-3800ppm[11] of detectable gluten from cross-contact with gluten grains

This means a guaranteed gluten-free oat production chain is an essential requirement for manufacturing oats that can be recommended for consumption by those with coeliac disease.

Only these specially produced oats that take measures to reduce cross-contact with wheat, rye and barley grains are suitable for those with coeliac disease. Extra protection to ensure an upper cross-contact level in those oats is not breached needs to be implemented in Australia.



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Methods used to reduce cross contact in oats:

There are two main methods employed by oat manufacturers to reduce the cross contact of gluten-containing grains within the oats produced.

Method 1

Follow an Oat Purity Protocol that is designed to manage cross-contact risk at all stages of production. This protocol designates:

- The use of pure oat seed.
- The use of land that has not grown wheat, rye or barley for a minimum of two years.
- Any rotational, off-season-crop, is a gluten-free crop
- The use of dedicated equipment and facilities to harvest and store the oats.
- Transport and processing facilities must also use dedicated or thoroughly cleaned equipment.
- This method is used by some oat growers in Australia
- Internationally, a further step is employed where legislation insists the oats are tested and must have <20ppm of gluten, to be considered acceptable for those with coeliac disease.

Method 2

Uses mechanical and optical sorting to identify and remove grains other than oats. Gluten cross contact overseas still needs to be less than 20ppm, to market them at people with coeliac disease.

People with coeliac disease, **in consultation with their healthcare team**, can choose to eat pure oats. It is important there is an understanding of how to choose pure oats to ensure suitable (uncontaminated) oats are used.

Generally an oat challenge is advised to assess suitability of oats. Follow the suggestions of the healthcare team.

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Oat Challenge

Introducing oats at the start of a gluten-free diet has not yet become standard practice in Australia and New Zealand, so it is important to ensure your patient, and their treating medical team, are involved in the discussions about this decision. Some people do not want to add oats, and some do.

Gastroenterologists are pivotal and their advice should be followed for each patient.

A small bowel biopsy pre and post daily oat challenge (~50-70g) has previously been prescribed as an essential part of the 3–6-month oat challenge. While biopsies may still be appropriate in some people, it is important that there be individual discussion with your patient and their gastroenterologist, to determine the best way to monitor oat tolerance for them. In some it may be beneficial to add oats from the start (see below) and monitor acceptance at the follow-up biopsy and in others, the oat challenge at a later date may be best.

There is currently no way to predict which people with coeliac disease will tolerate or react to pure oats. Caution and regular follow-up are therefore recommended.

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When can oats be added to the gluten-free diet?

There is a lack of international consensus regarding when pure oats should be introduced to the gluten-free diet. In many overseas countries pure oats are included in the diet from diagnosis[19], but sometimes it is recommended that pure oats be added into the gluten-free diet only once the individual's coeliac disease is stable and well managed[13,14]. On an individual basis, oats are removed if they are thought to be of concern.

Numerous gluten free products overseas contain specially produced oats or oat flour, making it harder and harder to avoid them in a regular gluten free diet.

In Australia, current food standards do not permit any type of oat to be labelled as gluten free. As a result, oats cannot be included in packaged products or foods sold in restaurants that are marketed or labelled as gluten free.

Dietitians are being encouraged to have informed conversations about oats with their patients who have coeliac disease. **An individualised approach with regular follow up is important.** Aspects to consider and discuss with your patient to guide an appropriate approach may include:

- Patient preference
- Do they like oats and/or are they already eating oats regularly?
    - If so, this suggests they have good oat tolerance and might be switched from the start to approved oat brands. This may prevent them from developing a sensitivity to oats over time, as is experienced by a portion of people when gluten and oats are totally removed from the diet.
- Do they feel they tolerate oats?
- Severity of symptoms at onset
- Severity of villi, small bowel damage at diagnosis
- Do they have Type 1 Diabetes or other metabolic or cardiovascular disease that may benefit from oats?
- What input or approach has been suggested by other members of the Health Care Team, especially their Gastroenterologist?
- The availability of a specialist who can ensure appropriate medical monitoring

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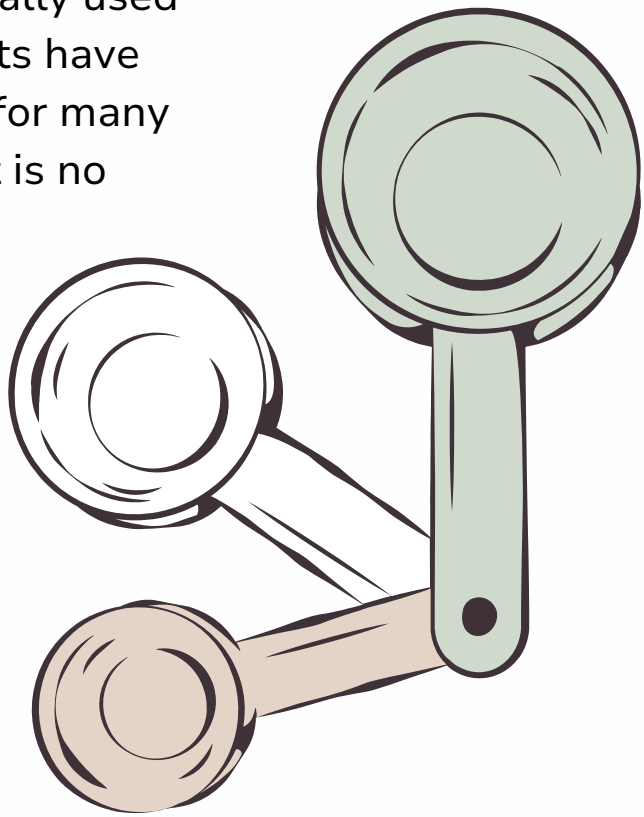
What Quantity should be eaten?

There is evidence to support the general safety of 50-70g (raw weight) of pure oats daily for the majority of adults with coeliac disease, and 25g daily for children.[15] These quantities are generally used for oat challenges. In countries where oats have been a regular part of a gluten-free diet for many years, the concept of a daily safe amount is no longer considered necessary.



When introducing oats for the first time, the suggestion is to start with smaller amounts of pure oats and gradually increase the quantity consumed is a sensible approach. This is highlighted in the 2025 Hardy et al Australian study[1] that showed tolerance to oats can be re-gained the longer the person was exposed to oats. This approach (and drinking adequate water) would also help to counteract the confounding symptoms that some may experience due to an increase in fibre intake.

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Reading Food Labels

What to look for on a food label?

If oats are to be included in the gluten free diet, then people should be referred to a dietitian and they should look for specially produced oats labelled...

Front of Packet:

It should declare any of these names below:

- Wheat-free, Pure, or Unconteminated
- Oats that do not have this declaration will be contaminated with some level of wheat, rye, or barley grains and are not suitable for those with coeliac disease

Ingredients List:

Oats will be listed as an ingredient

'Contains' allergy statement:

- Currently this will say **gluten**
- Under current FSANZ Plain English Allergen Labelling (PEAL) – if barley, rye or oat ingredients are used these grains will be summarised as 'gluten' in the Contains statement. (This gluten declaration can cast doubt on the suitability of the specially
- grown product).

'May Contain', 'May be Present' statement:

There should be **NO** mention here that the product might contain wheat, rye or barley

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Check the level of cross contact:

We suggest they check the brand websites, or contact manufacturers to determine if

- they test for gluten cross contact
- and if this is below 5 ppm or the international standard of ≤20ppm.

Note: An 'organic' claim

Indicates the oat has been grown without pesticides; this in no way ensures they have been grown to be free of wheat, rye or barley contamination. Suitable organic oats must state BOTH — organic oats AND 'pure, wheat free or uncontaminated' oats.

Note on oat Milk

Currently, there are no brands of oat milk sold in Australia that are made from pure, wheat-free oats, opening this type of product up to cross contact from wheat, rye or barley grains.

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Monitoring

There is limited consensus on how best to monitor a patient post oat introduction. There are a number of tools and markers available, including symptoms, blood antibody levels, biopsies and other clinical markers (including nutrient levels), but the optimal measures to assess oat safety are not determined; further information on these is discussed over the page.

It would be generally accepted that small intestinal damage (villous atrophy and raised intraepithelial lymphocytes) occurring in the context of oats ingestion is a concerning finding that would suggest the oats are not being tolerated, irrespective of symptom status.

It is important that the entire clinical picture be examined in context; there may not be a single approach that suits every patient. Importantly, each patient should receive relevant monitoring and follow-up care to help them manage their coeliac disease.

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BIOPSY

Small intestinal healing is considered the "gold standard" approach to assessing a person's coeliac disease recovery. The absence of mucosal deterioration (i.e. villous damage and inflammation) after extended and regular consumption of pure oats e.g. for 3 months or longer, is generally considered to suggest the oats are being safely tolerated. Based on this, most clinicians would consider that oats can be safely consumed long term, assuming the oats remain free of gluten contamination.

OAT CHALLENGE

An oat challenge requires a baseline villi image before oats are consumed. This is followed by 3-6 months of eating about 25g of 'pure oats' in children and 50g 'pure oats' in adults, on most days of the week raw weight of oats. A second small bowel biopsy is then done to confirm that no change to the villi has occurred during the time frame of oat ingestion. Smaller quantities of oats may be required at the start of the challenge if symptoms are experienced. Research suggests these symptoms will settle in most people with continued exposure.

The optimal approach to monitoring outcomes after oats introduction, whether at diagnosis of coeliac disease or later introduction in well-treated patients, has not been determined. Individualising care for your patient in conjunction with the medical team is important.

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SYMPTOMS

Symptoms are highly variable in people with coeliac disease and can occur in response to a number of triggers and associated medical conditions. While gluten can trigger adverse symptoms, other causes such as irritable bowel syndrome are also common in people with coeliac disease. Some people without coeliac disease can develop early symptoms to oats perhaps resulting from the high fibre and fructan content. In people with coeliac disease who develop adverse symptoms to oats, further medical work-up is recommended to see if it is causing mucosal damage. Explaining that symptoms can **decrease and disappear** in some, is also important in pushing through this process, especially when an oat challenge has been recommended. Symptoms are rarely equated with villi damage in the oat studies reported.

BLOOD TESTS

An important part of routine follow-up is the regular monitoring of coeliac-specific antibodies. Unfortunately, these usual antibody blood tests measure a response to gliadin and are unable to monitor the immune system's response to avenin, so are not a useful tool when monitoring a patient's response to an oat challenge.

TTG-IgA might be useful but is not generally considered to be a sensitive tool for this purpose.

There would need to be quite a lot of villi damage done from oats in order for other nutrient tests to be impacted through malabsorption.

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Community Consult

Proposal to reduce confusion about oats in Australia

To clarify oat terminology and identify a practical solution for all parties in Australia, we aim to work collaboratively with relevant stakeholders on this issue. This does not imply an intention to classify any oats as gluten free, as is the case in many other countries. Research shows that around 10% of people with coeliac disease may have an immune reaction to oats. For this reason, Australia does not need to adopt international approaches without careful consideration. Instead, Coeliac Australia believes we should learn from the overseas experience and develop a solution that meets the needs of the Australian community.

In many countries, the use of oat flour in gluten free products - such as breads, cakes, and baked goods - has increased significantly in recent years, alongside products like oat-based cereals and porridge. It is estimated (though not formally researched) that between 40 - 60% of products labelled gluten free overseas now contain oats.

At the same time, research indicates that approximately 10% of people with coeliac disease react to oat protein called **avenin**. In Australia, this represents around 40,000 - 50,000 individuals.

We have also heard from members of our community who found it difficult to access oat-free gluten free products overseas, and in some cases, returned to Australia for greater food choice and safety.

To prevent reduced food choice and potential food insecurity, it is important that any future approach balances both inclusion and safety. While many people with coeliac disease may tolerate specially produced oats, others cannot. Both groups need to be supported.

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Coeliac Australia's Oat Goals

In order to create clarity and safety we need

- To enable those who can tolerate oats to identify and purchase suitable products with confidence
- Ensure that Foods labelled "gluten free" remain free from oats so we can maintain a wide variety of safe, oat-free options for those who need them

What Needs to Change

1

Naming of Oats

A key step is finding an appropriate term to name these oats that are grown or produced to minimise gluten cross contact.

We do not recommend using the following terms:

- **"Gluten free"** – as some individuals with coeliac disease react to oat avenin
- **"Wheat free"** – this does not mean gluten free, and a 'May contain' statement could be present for rye and barley
- **"Pure"** – not supported by Food Standards Australia New Zealand (FSANZ)
- **"Uncontaminated"** – not commonly supported by oat producers

An alternative term, such as **"Oat Purity Oats" (OP Oats)**, could be explored, though further consultation is needed, and name suggestions are welcome.

2

Level of Cross Contact

Although some Australian oat producers take steps to minimise cross contact with gluten-containing grains, there is currently no legislated maximum level for gluten contamination in oats suitable for gluten-free diets.

Introducing a clear standard would provide greater confidence and consistency. A proposed threshold needs to be determined, but should not exceed the current international threshold of ≤20ppm. This would require further discussion and evidence review.

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What Needs to Change (continued...)

3

“Contains” Statements

Under current Plain English Allergen Labelling (PEAL) requirements, products that contain oats must declare the presence of gluten in the Contains statement. However, this may be confusing if oats are marketed in these products as suitable for people with coeliac disease.

We propose that where products meet an agreed gluten cross-contact level for oats, the label could instead state:

- **“Contains: avenin”**

For this to be effective, there needs to be broader awareness that **avenin is the protein in oats that can trigger an immune response in some people with coeliac disease.**

You may begin to hear the term avenin more frequently as part of ongoing education and discussion about oats.

Coeliac Australia will be seeking community feedback through a survey to understand how these proposed changes are perceived and whether they improve clarity and confidence.

Your input will play an important role in shaping how oats are managed in Australia moving forward.

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