

GLUTEN FREE FOODS

(Ensuring safe food for people suffering from celiac disease)

SUMMARY

Gluten is a protein present in wheat, rye, barley, and crossbreeds of these grains. Celiac disease is a hereditary, chronic inflammatory disorder of the small intestine triggered by the ingestion of gluten in genetically predisposed individuals. In these patients, the gluten protein is not digested completely and incompletely digested peptides (part of gluten protein) lead to activation of abnormal immune response which damages the inner line of the small intestine. The damage in small intestine leads to defective absorption of the nutrients including carbohydrate, protein, fat, iron, calcium, magnesium and vitamins. This leads to symptoms such as chronic diarrhoea, poor weight gain, lack of energy, irritability, and weakness of bones, growth retardation and even infertility.

Once the diagnosis of celiac disease is made, it is a life-long disease, and therefore, patient should not consume gluten containing food throughout life. It is known that even a small amount of gluten ingestion can aggravate the symptoms. Therefore, patients should follow a strict gluten-free diet (all meals, all snacks, and all what they eat).

Recognising the challenges faced by celiac patients, FSSAI has established the standard for 'GLUTEN FREE FOODS' and their labelling requirements under the Food Safety and Standards Regulations, 2011.

KEY TAKEAWAYS

- People with celiac disease should not consume food product containing gluten (wheat, barley etc.)
- Only foods that contain 20 mg gluten/kg or less can be labelled as 'gluten-free'.
- The patients with celiac disease should
 - ✓ Buy foods that are labelled 'gluten-free'.
 - ✓ Check the ingredient list and confirm that there is no gluten in the food.
 - ✓ Check the food package for 'GLUTEN FREE' label in the immediate proximity of the name of the product.
 - ✓ Should not buy flour from local mills where wheat may also be grounded for other customer and there are high chances of cross contamination.
 - ✓ Check FSSAI license number on the package(s).
 - ✓ Always read the manufacturing/ packaging date and best before date before buying food.
 - ✓ Check the labels, even on foods one buys regularly, as there may be some changes in ingredients used and that may contain gluten.

I. Introduction

Gluten is the main storage protein found in wheat and certain other cereal grains including rye, barley, oats, triticale, spelt, kamut, crossbreeds of these grains, and other grains produced by breeding wheat, rye, or barley with each other or breeding them with different grains. For example, triticale is produced by breeding wheat with rye, and so triticale also is considered to be a gluten-containing grain. Gluten adds elasticity, volume and texture to many food products. Foods that typically contain gluten include chapattis, breads, cakes, breakfast cereals, pastas, and many other grain-based foods. Gluten causes damage to the intestines of people predisposed to celiac disease and must be strictly avoided. People with non-celiac gluten sensitivity also need to avoid gluten.

II. Frequently Asked Questions (FAQs)

a) What is celiac disease?

Celiac disease is a chronic inflammatory disorder of the small intestine. This occurs in genetically predisposed individuals and is triggered by the ingestion of gluten. In these patients, the gluten protein is not digested completely and incompletely digested peptides (part of gluten protein) lead to activation of abnormal immune response which damages the inner line of the small intestine, where food is absorbed. As the absorption of food occurs in the small intestine, the damage in the small intestine leads to defective absorption of the nutrients including carbohydrate, protein, fat, iron, calcium and vitamins.

b) What is gluten?

Gluten is a protein present in cereals such as wheat, barley and rye. In 100 g of wheat, there is generally 8 g of gluten. Gluten provides special properties to the wheat flour that it forms a good dough for making breads, chapattis, pasta and other food items. Because of its unique property, gluten is used extensively in the food industry.

c) How Celiac disease develops?

There are two most important requirements for Celiac disease (CeD). Firstly, the individual should have genetic susceptibility (genetic make-up) for development of Celiac disease. Secondly, their diet should contain gluten. Not all those who have these two criteria fulfilled develop CeD. There are many other factors too.

Gluten has a unique structure, which is not digested completely in human small intestine. Partly digested fragments of the gluten protein activate the immune system in those people who have unique genetic make-up. The activated immune system damages the inner layer of small intestine where food is absorbed. This leads to defects in absorption of nutrients.

The process of damage continues, as long as these people keep taking gluten in any form. As the ingestion of gluten is stopped, the immune system stops damaging the intestine.

d) How common is celiac disease globally and in India?

Globally, one in 140 individuals has Celiac disease. In India, it was thought to be very uncommon about two decades back. But now Celiac disease is well recognized and it affects one in 140 Indians (0.6%). Celiac disease is more common in Northern part of India.

e) Various myths about Gluten

- **Myth:** Rice contains gluten.
Reality: Rice has glutinous part. This is starch and not gluten.
- **Myth:** Ice cream contains gluten.
Reality: Most ice creams do not contain gluten except if biscuit, cake, cone or wafers are added.
- **Myth:** Only those with Celiac Disease can have gluten sensitivity.
Reality: Wheat sensitivities can manifest as celiac disease, non-celiac wheat sensitivity (NCWS) or Dermatitis Herpetiformis (Itchy blistering rash) or wheat allergies. The symptoms and manifestations are similar. Treatment of strict lifelong avoidance to gluten is common to all.
- **Myth:** Gluten-free diet is a diet for weight loss.
Reality: Gluten free diets need not be weight loss diets. However, many who are wheat sensitive respond well but this is only if a healthy gluten free diet is followed. Unhealthy gluten free diets can be high on starch and low in nutrients.
- **Myth:** Gluten-free diets are healthier.
Reality: Not true. They can be highly processed, loaded with chemical additives and high on starch and sugars. Gluten free diets need to be planned well.
- **Myth:** Once symptoms improve one can restart gluten.
Reality: Most people with Celiac disease, wheat sensitivity or Dermatitis need to be on a lifelong gluten free diet.

III. What are the symptoms of celiac disease?

The spectrum of symptoms of celiac disease is vast and comprises of symptoms as summarized below:

- Chronic/recurrent diarrhoea
- Failure to gain weight
- Failure to gain height
- Generalized weakness
- Anaemia
- Delayed puberty
- Irritability and behavioural issues
- Infertility
- Metabolic bone disease

IV. What is the treatment of Celiac disease?

The only available treatment for patients with Celiac disease is strict and life-long avoidance of gluten containing food. Once gluten is withdrawn from the diet, the flattened villi in the lining of the small intestine gradually return to normal. Individuals diagnosed with celiac disease and their families should consult a qualified nutritionist/dietician for dietary counselling. Repeated counselling and discussion on the barrier for maintaining gluten-free life is very helpful. The management of this condition requires:

- Adequate knowledge about gluten- free ingredients and foods.
- Focus on healthy eating of variety of foods, not just a gluten-free diet.
- A lifelong, strict adherence to a gluten- free diet.

V. Regulatory aspects of gluten- free food

1) International Standards:

Provisions related to Gluten free food in Codex and European Union (EU) provides that the product shall not have more than 20 mg/kg of gluten.

2) Provisions under Food Safety and Standards Act, 2006

Standards of 'Gluten Free Food' is notified in the Sub Regulation 2.14 of Food Safety and Standards (Food Products Standards and Food Additives), Regulations, 2011, wherein, it is mentioned that gluten levels shall be below 20 mg/kg and it shall bear the label declaration referred to in sub-regulation 2.4.5 (50) of Food Safety and Standards (Packaging and Labelling) Regulations, 2011 i.e., the term "**Gluten free**" shall be printed in the immediate proximity of the name of the product.

These regulations are available on FSSAI website (www.fssai.gov.in).

FSSAI is also in the process of removing the provisions relating to the standard of “Food specially processed to reduce gluten content to a level 20-100 mg/kg” from the Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011 and 'Low Gluten and warning for low gluten', respectively under Food Safety and Standards (Packaging and Labelling) Regulations, 2011.

Further, FSSAI is in the process of adding labelling provisions for addressing the issue of cross contamination.

3) Provision for approval of Rapid Analytical Food Testing (RAFT) kit/ Equipment/ Method:

'Strip based rapid test methods' are present for testing of gluten free foods. FSSAI has not so far validated these methods. Manufacturers of such kits are encouraged to apply for confirmation / approval of kit.'

Details are available on the FSSAI website (www.fssai.gov.in).

VI. Information on gluten free ingredients/foods for people suffering from celiac disease

Grains to be avoided:

- Wheat (wheat germ, wheat bran, wheat starch, bulgar, durum, kibbled wheat)
- Semolina (a derivative of wheat)
- Barley (barley malt, barley extract)
- Vermicelli (a derivative of wheat)
- Pure Oats (Oats bran and oat germ)
- Triticale (a cross between wheat and rye)
- Einkorn (wild species of wheat)
- Farina (cream of wheat)
- Couscous (a derivative of wheat)
- Rye, Spelt, Kamut (a variety of wheat)

Grains to be consumed:

- Rice
- Brown rice
- Corn, Maize, Cornmeal
- Sorghum (Jowar)

- Chestnut flour (singhara)
- Quinoa
- Carob flour
- Wild rice
- Millets [Bajra, ragi]
- Amaranth (ramdana)
- Buckwheat (kasha/kuttu)
- Tapioca Sago (Sabudana)
- All Pulses, legumes

Processed food to be avoided:

Patients suffering from celiac disease should check ingredients details on the label before buying any packaged food products since it may contain gluten e.g., (Instant Noodles, Macaroni, Pasta, Bread, Compounded asafoetida or Bandhani Hing etc.)

VII. Key Points for Food Business Operators (FBOs)

1) For Manufacturers/ Processors

- Must comply with the provision of Gluten free food standard prescribed by FSSAI
- Only foods that contain 20 mg gluten/kg or less can be labelled as 'gluten-free'.
- In case, any gluten free product is manufactured in a plant where gluten containing products are also manufactured this shall be declared on the label as *“Processed in a plant where gluten containing products are manufactured.”*
- Should avoid cross contamination of gluten free food.
- Ingredients must be handled properly, if there is a common facility for gluten – free and gluten - containing ingredients to prevent cross contamination.
- Should establish separate storage and preparation/ staging areas for gluten-free and gluten-containing ingredients.
- Should have separate production area and equipment with controlled air-flow between the two production areas. This practice will minimize the potential for air borne flour dust contamination.
- Equipments should be dedicated to each area for use on gluten-free or non-gluten free production.
- Should have separate equipments that is clearly marked and used for either gluten free or gluten containing products. This includes measuring tools, mixing bowls, pans, utensils, etc.

- Should provide training to all the employees to have clean garments and hands when handling gluten-free products.
- Manufacturing, processing and packaging of gluten free food should be done separately to avoid cross contamination.

2) For Storage and Transportation

- Should avoid cross contamination of gluten free food products with gluten containing products.
- Ingredients and finished products should be stored properly to avoid cross contamination.

3) For Hotel and Restaurants

- Are encouraged to keep gluten free food option at their outlets.
- May provide gluten free food on demand to the customer.
- If gluten free food options are available, then they should have separate counter and kitchen for avoiding cross contamination of gluten free food.
- Should use clean utensils for preparing gluten free food.
- Should provide training to the workers for handling/ preparing gluten free food and personal hygiene such as; washing of hands between use of gluten containing and gluten free ingredients, wearing of clean cloths and apron etc.
- Should provide training to all staff on all aspects of sourcing, preparation and serving of gluten-free food.
- Should do internal audit to ensure 'practice is maintained and staff is efficient in their knowledge and working behaviour'.
- Should use clean oil for frying, clean water for boiling/ preparation etc.
- In the buffe, Gluten free food should be labelled properly.
- Menu card should contain the option for Gluten free foods.

VIII. For Consumers (How to read label?)

Consumers should read the label properly. Label reading is always done to check the nutritional content of food items. But it is one of the key success factors in maintaining good adherence to gluten free diet. The following points need to be checked while investigating a food label for gluten free safety.

- Gluten free certification mark
- Ingredients – These need to be checked regularly since food companies keep changing them.
- Allergen warning – If a product does not mention about being gluten free, it is always advisable to read the allergen warning.

- Precautionary statements - Other than allergen warning, some products mention precautionary statements like “Manufactured in the same line with wheat” or “Processed in the same unit that also processes wheat”.
- If the label doesn't make it clear about its gluten free safety, you can call or contact the manufacturers to confirm.
- Lastly, if in doubt, leave it out.
- Beware of foods labelled “Wheat-free” as they may contain grains such as barley, rye, spelt or kamut which are not gluten-free.

IX. How to report the sale of misleading products.

- ✓ Consumers should inform the Food Safety Department about any illegal sale of adulterated foodstuff in their areas. Anyone can report the problem relating to safety of food to the concerned State Food Safety Commissioners. Contact details of Food Safety Commissioners are available on FSSAI website www.fssai.gov.in.
- ✓ Consumers can also share their concerns through Food Safety Connect Portal (<https://foodlicensing.fssai.gov.in/cmsweb/>) or may register their complaint on FSSAI App available at Google Play store.
- ✓ Consumers can also visit on (<http://foodsmart.fssai.gov.in/home.html>) to become aware of other food safety/labelling provisions.

X. References

Related FSSAI Regulations and Standards

- *Food Safety & Standards (Food products Standards and Food Additives), Regulations, 2011.*
- *Food Safety and Standards (Packaging and Labelling) Regulations, 2011*

Other sources

- *ICMR Guidelines on Diagnosis and Management of Celiac Disease, Division of Non-communicable Disease, New Delhi*
- *Celiac Society of India, <http://www.celiacsocietyindia.com>*
- *Celiac Disease Foundation, <https://celiac.org>*