



Gluten-Free Diets: Evidence for Efficacy and Applications

Celiac disease is thought to affect approximately 1% of the world's population. There is clear evidence that following a gluten-free diet appears to greatly help in the management of the disease and lowers the risk of developing a related condition. Recently there has been growing public interest in following a gluten-free diet in an otherwise healthy and disease-free population. It is unclear at this point as to what the benefits / problems of following a gluten-free diet in individuals without celiac disease or gluten sensitivity would be. PubMed and the Institute of Scientific Information's Web of Science search engines were used to identify peer-reviewed publications using the following key words singly and in combination: gluten, gluten-free, gluten-free diet, celiac disease, autism. The key findings are outlined here.

- Gluten-free diets are clearly indicated for individuals with celiac disease and gluten sensitivity. The diet greatly reduces symptoms and may be associated with improved survival and lowered incidence of diseases such as gastrointestinal cancers in these patients. The tolerable limit of gluten varies considerably among people with celiac disease. Although no specific threshold has been established, a daily gluten intake of <10 mg/day is thought to be unlikely to cause significant cellular changes in people with celiac disease.
- Gluten-free diets have several shortcomings such as adversely altered intestinal flora and an elevated risk of micronutrient deficiencies in patients with celiac disease.
- There is no evidence to suggest that following a gluten-free diet has any significant health benefits with regards to improving cardiovascular risk in the general population.
- There is limited evidence to suggest that following a gluten-free diet in the general population may result in sub-optimal management of cardiovascular risk.
- There is some evidence to suggest that the addition of gluten to a typical diet is associated with several important cardiovascular benefits in otherwise healthy individuals.



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- There is limited evidence of efficacy of gluten-free diets in chronic, auto-immune conditions such as psoriasis, rheumatoid arthritis and type 1 diabetes. This may be reflective of a more generalized inflammatory state and cross-reactivity between gliadin (a gluten protein) and various components of an already hyperactive immune system. At present, there appears to be no causal link between gluten and the appearance or incidence of these diseases in humans.
- At present there are no data from double-blind, placebo-controlled trials that support the use of a gluten-free, casein-free diet in individuals with autism. Some smaller, poorly controlled trials have shown marginal effects in subjective outcome measures in individuals with autism. These findings need to be confirmed by larger, double blind, placebo controlled trials.

Key Findings

- Gluten-free diets are clearly indicated for individuals with celiac disease and gluten sensitivity.
- There is some evidence to suggest that the addition of gluten to a typical diet is associated with several important cardiovascular benefits in otherwise healthy individuals.
- There is limited evidence of efficacy of gluten-free diets in chronic, auto-immune conditions such as psoriasis, rheumatoid arthritis and type 1 diabetes.
- At present there are no data from double-blind, placebo-controlled trials that support the use of a gluten-free, casein-free diet in individuals with autism.