

# The Burnham Review

## Reasons to Eliminate Gluten

Review of Research on Manual Therapy and Complementary and Alternative Medicine

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**Kimberly Burnham, PhD Editor**

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bean flour instead of wheat flour.<sup>2</sup> (NIH, 2006)  
Currently, wheat and grain growers have an incentive to increase the amount of gluten in their products because grain with a higher protein content brings a higher market price. At the same time more and more companies are looking at how to best market gluten-free products. The taste and quality of gluten-free foods is also getting better and better.

### Introduction

A gluten-free diet is a way of life for the person with celiac disease, a digestive disorders due to severe gluten sensitivity. No one needs to tell them to stay completely off of gluten, the protein component in many grains. But what about people with joint pain, brain fog, loss of balance or other neurologic and auto-immune disorders? All of these things have also been linked with gluten consumption.

One out of every 133 healthy adults in the United States<sup>1</sup> (Univ of Chicago Celiac Disease Program, 2006), has celiac disease and the accompanying digestive problems if they eat anything with gluten. Gluten is the protein component of several grains. A variety of factors, including genetic inheritance, infections, liver function and even a summer birthday can influence gluten sensitivity.

According to the recent medical literature, people with the following conditions may benefit notably from a gluten-free diet:

- Rheumatoid arthritis
- Multiple sclerosis

- Ataxia (loss of balance)
- Late-onset Friedreich ataxia
- Down's syndrome
- Cognitive problems (brain fog)
- Osteoporosis
- Type 2 and Type 1 diabetes
- Anemia

### Gluten-Free Diet

A gluten-free diet means not eating foods that contain wheat (including durum, spelt, triticale, and kamut), oats, rye, and barley. The foods and products made from these grains are also not allowed. In other words, a person with celiac disease should not eat most grain, pasta, cereal, and many processed foods. Despite these restrictions, people with celiac disease can eat a well-balanced diet with a variety of foods, including gluten-free bread and pasta. For example, people with celiac disease can use potato, rice, soy, amaranth, quinoa, buckwheat, or

### Integrative Manual Therapy (IMT) For the Gluten Sensitive

In addition to dietary changes, people with gluten related symptoms can look to Integrative Manual Therapy (IMT) for help with shifting physical pain and loss of function. IMT practitioners are seeing evidence of what could potentially be called a gluten-sensitivity epidemic. Physical indicators of a problem digesting and processing gluten include, positive myofascial mapping, an IMT diagnostic procedure assessing the connective

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tissue at the ileocecal valve or the first part of the large intestine near the right hip. There is also evidence of the presence of allergy related circadian rhythms in the large intestine.<sup>3</sup> (Weiselfish-Giammatteo, 2002).

Other indicators are zinc, manganese and chlorophyll deficiencies. There is often skeletal muscle and smooth muscle weakness seen in these neurologic and autoimmune disorders. There is considerable evidence in the medical literature linking nutritional deficiencies, gluten sensitivity and other disease processes.

### **Gluten Sensitivity, Neuromyelitis Optica, Seizures and Peripheral Neuropathy**

From the Journal of Neurol Neurosurg Psychiatry and the British Medical Journal come reports of sever neurological problems associated with gluten sensitivity. Once considered part of the spectrum of multiple sclerosis, neuromyelitis optica, is a clinical syndrome characterized by acute transverse myelitis plus an acute or subacute optic neuritis (inflammation of the nerves to the eye). Several neurological complications have been described associated with gluten sensitivity ranging from peripheral neuropathy and cerebellar ataxia to an increased risk of epilepsy. Gluten sensitivity is confirmed by immunological and histological studies.<sup>4</sup> (Jacob 2005).

### **Arthritis Pain: Rheumatoid Arthritis, Sjogren's and Gluten**

This from the Journal of Rheumatology, which hopefully rheumatologists are reading and making recommendations concerning a gluten free diet.. Rheumatoid arthritis (RA), Sjogren's

syndrome and other inflammatory arthritis's have been linked to gluten sensitivity. One journal article noted, "the data provides evidence that dietary modification may be of clinical benefit for certain RA patients, and that this benefit may be related to a reduction in immunoreactivity to food antigens eliminated by the change in diet."<sup>5</sup> (Hafstrom, 2001)

Another researcher found, "an increased prevalence of raised autoantibodies, including rheumatoid factor, has been reported in patients with gluten sensitivity. This selective increase of IgA rheumatoid factor suggests that rheumatoid factor production in patients with gluten sensitivity primarily results from immunological activation in the gut mucosa."<sup>6</sup> (Sokjer 1995). A study from 1984 found, circulating antibodies to gliadin, gluten and 'reticulin glycoprotein' have not been previously recognized in Sjogren's. Their occurrence suggests that small bowel injury may be common in Sjogren's.<sup>7</sup> (Teppo, 1984).

### **The Swedish Epidemic**

From a 2005 study<sup>8</sup> (Ivarsson, A. 2005), "Sweden has experienced an epidemic of symptomatic celiac disease that has no likeness anywhere else in the world. This is quite unique for a disease that is genetically dependent, immune-mediated and chronic, and suggests an abrupt increase and decrease, respectively, of one or a few causal factors."

Researchers noted, "half of the epidemic was explained by an increase in the proportion of infants introduced to gluten in comparatively large amounts after breast-feeding had been ended. Moreover, children born during

summer had an increased risk for coeliac disease, possibly as they were mostly introduced to dietary gluten during winter when infections are more common."

### **EnteroLab**

The lab will do a stool test (no physician referral required) for gluten, dairy, egg, yeast, and soy. Also does a cheek swab DNA gene analysis to determine if you have the celiac genes or gluten sensitivity genes. Good to measure your degree of gut irritation/dysfunction  
[www.enterolab.com/](http://www.enterolab.com/) (From Anne Howard, PT)

### **A Wide Range of Diseases Associated with Gluten**

According to a magazine for people with celiac disease, Living Without,<sup>9</sup> (Woodward, 2007), the following conditions are commonly associated with gluten consumption: iron-deficiency anemia, diarrhea, failure to thrive, abdominal distention. Less common features include: short stature, delayed puberty, gastrointestinal features, recurrent abdominal pain, osteoporosis, vitamin K deficiency, athropathy (joint dysfunction), polyneuropathy, ataxia, epilepsy (with or without cerebral calcification), infertility, recurrent abortions, anxiety and depression, alopecia (hair loss). Conditions associated with gluten allergies include: dermatitis herpetiformis, IgA deficiency, Type I diabetes, autoimmune thyroid disease, Sjogren's syndrome, microscopic colitis, rheumatoid arthritis, Down's syndrome, IgA nephropathy.

Living Without lists the following as conditions possibly associated with gluten: congenital heart disease,

pericarditis, sarcoidosis, cystic fibrosis, fibrosing alveolitis, lung cavities, pulmonary hemosiderosis, inflammatory bowel disease, autoimmune hepatitis, primary biliary cirrhosis, Addison's disease, schizophrenia systemic lupus erythematosus, vasculitis, polymyositis, and Myasthenia gravis.

### **Autistic Behavior Improves with Gluten-Free**

In one of several studies linking gluten and autism, parents reported improvements in their children during the gluten-free period. The study "tested the efficacy of a gluten-free and casein-free diet in treating autism using a randomized, double blind repeated measures crossover design. The sample included 15 children aged 2-16 years with autism spectrum disorder. Data on autistic symptoms and urinary peptide levels were collected in the subjects' homes over the 12 weeks that they were on the diet."<sup>10</sup> (Elder, 2006). Elder reported this in an article entitled, "The gluten-free, casein-free diet in Autism: results of a preliminary double blind clinical trial" in the *Journal of Autism and Developmental Disorders*, last year.

Another study looked improving function in autistic children and gave dietary restrictions, including removal of milk and other casein dairy products, wheat and other gluten sources, sugar, chocolate, preservatives, and food coloring are beneficial and a prerequisite to benefit from other interventions. Researchers went on to say, "many nutrient supplements are beneficial and well tolerated, including dimethylglycine (DMG) and a combination of pyridoxine (vitamin B6) and magnesium, both of which benefit roughly half of ASD cases.

Vitamins A, B3, C, and folic acid; the minerals calcium and zinc; cod liver oil; and digestive enzymes, all offer benefit. Immune therapies (pentoxifyllin, intravenous immunoglobulin, transfer factor, and colostrum) benefit selected cases. Long-chain omega-3 fatty acids offer great promise.<sup>11</sup> (Kidd, 2002).

### **Shake the Depression Gluten-Free**

Gluten sensitivity has also been linked with depression in teenagers in an article in *Biomedical Central (BMC) Psychiatry*. One study suggested, "serotonergic dysfunction due to impaired availability of tryptophan may play a role in vulnerability to depressive and behavioral disorders also among adolescents with untreated coeliac disease."<sup>12</sup> (Pynnonen, 2005).

### **Gluten Ataxia and Immune System Related Balance Problems**

In one study with 12 people with idiopathic (no known reason) ataxia, gluten was found to be relevant in 8 cases.<sup>13</sup> (Anheim, 2006 in *Rev Neurology (Paris)*).

From the *Journal of Neurology* comes this study, "this finding strengthens the contention that gluten ataxia is immune mediated and belongs to the same spectrum of gluten sensitivity as celiac disease and dermatitis herpetiformis."<sup>14</sup> (Hadjivassiliou, 2006).

From *Internal Medicine*, "gluten sensitivity is associated with multiple neurological abnormalities including gluten ataxia, motor neuron disease-like neuropathy, small fiber type neuropathy, cognitive impairment, and even parkinsonism."<sup>15</sup> (Ihara, 2006).

### **Let Go of Obsessive-Compulsive Behavior**

There is some evidence that links

gluten sensitivity with obsessive-compulsive behavior and with Tourette's syndrome. "There is an "emerging concept" that central nervous system dysfunction can be caused by an aberrant immune response triggered by exogenous antigens such as the food allergen gluten or streptococcal infection. Sydenham's chorea, Tourette's syndrome, obsessive-compulsive disorder and other movement disorders have been described in association with anti-basal ganglia antibodies. Wills went on to say, "the current working hypothesis is that antibodies induced in response to streptococcal infection cross-react with antigenic determinants in the basal ganglia resulting in basal ganglia dysfunction. Although the experimental evidence is incomplete, there is sufficient evidence to support immune-mediated basal ganglia dysfunction as an emerging clinical entity."<sup>16</sup> (Wills, 2005).

### **Gluten and the Opium Connection**

Nature, a well respected scientific journal reports on another study comparing the chemistry of gluten to that of opium like chemicals. "Opiate receptor-active peptide fragments (exorphins) have been identified recently in casein and gluten hydrolysates, and morphine has been found in bovine and human milk."<sup>17</sup> (Boublik, 1983).

### **Gluten and Schizophrenia**

Researchers have noted that schizophrenia, which affects roughly 1% of the population and is considered one of the top 10 causes of disability worldwide, is also linked with gluten. "A drastic reduction, if not full remission, of schizophrenic symptoms after initiation of gluten withdrawal has been noted in a variety of studies."<sup>18</sup>

(Kalaydjian, 2006).

### **Gluten, Blood Sugar and Diabetes**

“Celiac patients are at high risk of developing insulin-dependent diabetes mellitus, a condition that has a long pre-diabetic period. During this lapse, anti-islet cell antibodies serve as markers for future disease. This may be related with the duration of the exposure to gluten.” Researchers concluded, “Celiac patients long exposed to gluten have a significantly higher prevalence of anti-islet cell antibodies than those exposed for a short period. This fact supports the hypothesis that the development of these antibodies is associated with the length of the exposure to gluten.”<sup>19</sup> (Verbeke, 2004).

In another study with a 6-month gluten-free period, researchers concluded, “these findings indicate that 6 months of gluten deprivation do not influence humoral autoimmunity, but may have a beneficial effect on preservation of beta-cell function in subjects at risk for Type 1 diabetes.”<sup>20</sup> (Pastore, 2003).

Both Type 1 and Type 2 diabetes have been linked to gluten. “This population-based study showed the highest reported prevalence of celiac disease in Type 1 diabetes in Europe. Patients with celiac disease showed clinical improvements with a gluten-free diet (GFD). We recommend screening for celiac disease in all children with type 1 diabetes.”<sup>21</sup> (Hansen, 2006, in Diabetes Care).

### **Gluten, Osteoporosis & Bone**

Many people with celiac disease also have osteoporosis. When it comes to osteoporosis the sooner the gluten-free diet starts the better. “Although treatment with a gluten-free diet appears to prevent bone loss

while correcting skeletal demineralization in childhood, there is evidence that mineral density does not return to normal in if diagnosed in adulthood.”<sup>22</sup> (Fiore, 2006) It is also interesting to note that the worst bone problems were in the hips (near the large intestine) rather than in the spine.

Calcium malabsorption hypocalcemia (low calcium in the blood) and skeletal demineralization (osteoporosis) are well-recognized features of untreated celiac disease. Researchers found this “suggestive of a continuing long-term benefit of gluten withdrawal on bone metabolism in celiac patients.”<sup>23</sup> (Pazianas, 2005).

### **Gluten and Zinc Metabolism**

Zinc is an essential trace metal nutrient and has a role as a component in metal-protein interactions for a substantial number of human metabolic functions. From the American Journal of Clinical Nutrition come two articles linking zinc problems with gluten sensitivity.

“The primary site of absorption of zinc is thought to be the duodenum and jejunum (small intestine), which are also the locations of the most severe mucosal lesions in celiac disease.” Solomons continues, “these observations indicate that trace metal deficiency is another common nutritional complication of adult celiac disease.”<sup>24</sup> (Solomons, 1976).

It seems that even if zinc intake is normal there can be deficiencies due to an increased turn over and loss of zinc.<sup>25</sup> (Crofton, 1990).

### **Down’s Syndrome**

Zinc levels have also been found to be lower than normal in people with Down’s syndrome (DS). The zinc deficiencies, diarrhea and weight loss in adults with Down’s

syndrome has been linked to gluten sensitivity. One study found “28 % of the DS patients had autoantibodies to the thyroid gland. Our results suggest intestinal malfunction in DS, perhaps related to a defect of immune regulation caused by reduced levels of zinc in serum.”<sup>26</sup> (Kanavin, 1988).

**For more information and references see**  
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**Web Sites** for additional details about celiac disease (compiled with the help of Anne Howard, PT)

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[www.angelhealingcenter.com/GlutenIntolerance.html](http://www.angelhealingcenter.com/GlutenIntolerance.html)
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3. [Café Gratitude Recipe Book](http://www.withthecurrent.com/cafe.html), a most amazing restaurant - raw vegan, gluten-free dairy-free, non-genetically modified, no processed sugar and all the food is delicious and satisfying  
[www.withthecurrent.com/cafe.html](http://www.withthecurrent.com/cafe.html)
4. [Celiac Disease Foundation](http://www.celiac.org/)  
[www.celiac.org/](http://www.celiac.org/)
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[www.csaceliacs.org](http://www.csaceliacs.org)
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7. [Enterolab](http://www.enterolab.com) Labwork [www.enterolab.com](http://www.enterolab.com)
8. [Gluten& Casein Free](http://www.gfcdiet.com) [gfcdiet.com](http://www.gfcdiet.com)
9. [Celiac.com](http://www.celiac.com), [www.celiac.com](http://www.celiac.com)
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12. [Gluten-Free Works](http://www.glutenfreeworks.com/gluteninformation.php)  
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14. [Kinnikinnick Foods Inc](http://www.kinnikinnick.com)  
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16. [Public Medline](http://www.ncbi.nlm.nih.gov) [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)
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**Web Sites** for additional details about celiac disease (compiled with the help of Anne Howard, PT)

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2. Burnham, K (2007) Benefits of a Gluten-Free Diet, Suite 101, from [www.suite101.com/profile.cfm/KimBurnham](http://www.suite101.com/profile.cfm/KimBurnham)
3. Café Gratitude Recipe Book, a most amazing restaurant - raw vegan, gluten-free dairy-free, non-genetically modified, no processed sugar and all the food is delicious and satisfying [www.withthecurrent.com/cafe.html](http://www.withthecurrent.com/cafe.html)
4. Celiac Disease Foundation. [www.celiac.org/](http://www.celiac.org/)
5. Celiac Sprue Association [www.csaceliacs.org](http://www.csaceliacs.org)
6. Celiac Sprue <http://members.ozemail.com.au/~coeliac/sprue.html>
7. Celiac Disease Foundation [www.celiac.org](http://www.celiac.org)
8. Celiac Disease Center at Columbia College [www.celiacdiseasecenter.columbia.edu](http://www.celiacdiseasecenter.columbia.edu)
9. Celiac/Coeliac, Dermatitis Herpetiformis, Wheat/Gluten-Free [www.enabling.org/ia/celiac/index.html](http://www.enabling.org/ia/celiac/index.html)
- 10 Celiac Sprue Association [www.csaceliacs.org/](http://www.csaceliacs.org/)
11. Enterolab, site that will do a stool test (no physician referral required) for gluten, dairy, egg, yeast, and soy. Also does a cheek swab DNA gene analysis to determine if you have the celiac genes or gluten sensitivity genes. Good to measure your degree of gut irritation/dysfunction [www.enterolab.com/](http://www.enterolab.com/)
12. Gluten Intolerance Group [www.gluten.net](http://www.gluten.net)
13. Gluten Free Casein Free Food [www.gfcfdiet.com](http://www.gfcfdiet.com)
14. Gluten Intolerance Group of North America, a good 2 page brochure on the differences between celiac and gluten-sensitive enteropathy and basic frequently asked questions (FAQ). [www.gluten.net/downloads/infopackets/GlutenIntolnotCD.pdf](http://www.gluten.net/downloads/infopackets/GlutenIntolnotCD.pdf)
15. Celiac.com, a great multi-purpose site, including basic information and links to recent relevant medical findings on celiac disease and gluten sensitivity. [www.celiac.com](http://www.celiac.com)
16. Gluten Freedom [www.glutenfreedom.net/page.asp?itemid=12](http://www.glutenfreedom.net/page.asp?itemid=12)
17. Gluten Reactivity, a good site with a lot of education, designed for the undiagnosed person wondering how to manage the testing and change of diet. [www.glutensensitivity.net/](http://www.glutensensitivity.net/)
18. Gluten-Free Links, Celiac Disease/Gluten Intolerance Web Sites [www.gflinks.com](http://www.gflinks.com)
19. Gluten-Free Works [www.glutenfreeworks.com/gluteninformation.php](http://www.glutenfreeworks.com/gluteninformation.php)
20. Gluten-Free [www.glutenfree.com/](http://www.glutenfree.com/)
21. Kinnikinnick Foods Inc [www.kinnikinnick.com](http://www.kinnikinnick.com)
22. Melissa Diane Smith [www.melissadianesmith.com/Articles/GlutenSensitivityDerailingHealth.html](http://www.melissadianesmith.com/Articles/GlutenSensitivityDerailingHealth.html)
23. National Foundation for Celiac Awareness [www.celiaccentral.org/](http://www.celiaccentral.org/)
24. Public Medline [www.ncbi.nlm.nih.gov](http://www.ncbi.nlm.nih.gov)
25. Shop by Diet, a great website that will list foods by your dietary needs, allowing you to filter their entire online store by gluten free, dairy-free, peanut-free, or whatever restrictions you are currently needing. [www.shopbydiet.com](http://www.shopbydiet.com)
26. University of Chicago Celiac Disease Program [www.celiacdisease.net](http://www.celiacdisease.net)

## Reasons to Adopt a Gluten-Free Diet

by Kimberly Burnham

A gluten-free diet is a way of life for the person with celiac disease, a digestive disorders due to severe gluten sensitivity or dermatitis herpetiformis, a skin condition directly linked with gluten sensitivity. No one needs to tell them to stay completely off of gluten, the protein component in many grains. But what about people with joint pain, brain fog, loss of balance or other neurologic and auto-immune disorders? All of these have been linked with gluten consumption.<sup>27</sup>

Today conservative estimates say, 1 out of every 133 healthy adults in the United States<sup>28</sup> has celiac disease and digestive problems upon eating gluten. A variety of factors, including genetic inheritance, infections, liver function and even a summer birthday can influence gluten sensitivity.<sup>29</sup>

The word gluten appears in 7425 Medline indexed articles. Medline, a database of medical journals also lists 456 articles with “Gluten-Free” in the title. The first one appeared in 1952 in the *Lancet*. Fifty percent of the articles have appeared since 1995 with more than 10% in the last two years. Today these articles appear in places like *Clinical Endocrinology*, *American Journal of Gastroenterology*, *Annals of Internal Medicine*, *Neurology*, *Archives of Dermatology*, *Biological Psychiatry*, *The British Journal of Dermatology*, *British Medical Journal*, *Diabetic Medicine*, *Family Practice*, *Nursing Times*, *Osteoporosis International*, *Radiology*, *Annals of Rheumatic Disease*, *The Journal of Rheumatology* and more.

According to the recent medical literature, people with the following conditions may benefit notably from a gluten-free diet: celiac disease and dermatitis herpetiformis<sup>30, 31</sup>, rheumatoid arthritis<sup>32, 33</sup>, Sjogren's<sup>34</sup>, Multiple sclerosis<sup>35</sup>, Parkinson's disease<sup>36</sup>, depression<sup>37</sup>, Neuromyelitis (nervous system inflammation) and peripheral neuropathies<sup>38</sup>, seizures<sup>39</sup>, Autism<sup>40, 41</sup>, obsessive-compulsive behavior<sup>42</sup>, Tourette's and tics<sup>43</sup>, Schizophrenia<sup>44</sup>, Ataxia (loss of balance)<sup>45, 46, 47</sup> including late-onset Friedreich ataxia, Down's syndrome<sup>48</sup>, cognitive problems (brain fog)<sup>49</sup>, osteoporosis<sup>50, 51</sup>, Type 1 & 2 diabetes<sup>52, 53, 54</sup>, anemia<sup>55</sup> and more.<sup>56</sup>

### Gluten-Free Diet

A gluten-free diet means not eating foods that contain wheat (including durum, spelt, triticale, and kamut), oats, rye, and barley. The foods and products made from these grains are also not allowed. In other words, a person with gluten sensitivity should not eat most grain, pasta, cereal, and many processed foods. Despite these restrictions, people with celiac disease can eat a well-balanced diet with a variety of foods, including gluten-free bread and pasta. For example, people can use potato, rice, soy, amaranth, quinoa, buckwheat, or bean flour instead of wheat flour<sup>57</sup>.

### Integrative Manual Therapy (IMT) For the Gluten Sensitive

In addition to dietary changes, people with gluten related symptoms can look to Integrative Manual Therapy (IMT) for help with shifting physical pain and loss of function. IMT practitioners are seeing evidence of what could potentially be called a gluten-sensitivity epidemic. Physical indicators of a problem digesting and processing gluten include, positive myofascial mapping, an IMT diagnostic procedure assessing the connective tissue at the ileocecal valve or the first part of the large intestine near the right hip. There is also evidence of an allergy related circadian rhythms in the large intestine.<sup>58</sup>

Other indicators are zinc, manganese and chlorophyll deficiencies.<sup>59</sup> There is considerable evidence in the medical literature linking nutritional deficiencies, gluten sensitivity and other disease processes, including skeletal muscle and smooth muscle weakness seen in neurologic and autoimmune disorders.

A recent study noted, “a screening for celiac disease should be carried out in adult patients with iron deficiency anemia. Recovery from anemia occurs between 6 and 12 months on a gluten-free diet alone as a consequence of normalization of histological alterations of the intestinal mucosa.”<sup>60</sup>

Nature, a well respected scientific journal reports on another study comparing the chemistry of gluten to that of opium like chemicals. “Opiate receptor-active peptide fragments (exorphins) have been identified recently in casein and gluten hydrolysates, and morphine has been found in bovine and human milk.”<sup>61</sup>

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