The Great Plains Laboratory, Inc.
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What Are Peptides?

Specimen Requirements: 10 mL of first morning urine (most concentrated) – Follow instructions provided in the test kit.

Innovations in Testing

With the recent attention on the gluten-free, casein-free diet and its positive affects for those with gastrointestinal, neurological, and movement disorders, The Great Plains Laboratory, Inc. offers a test which can help to determine whether the diet should be part of an overall integrated treatment plan.

This test measures levels of two opiate peptides derived from dairy and gluten products. Peptides are small fragments of proteins; many peptides engage in cell-to-cell signaling and have neurological effects. Casomorphin is produced by digestion of casein, the major protein in all mammalian milk, including human milk. The opiate effect of milk may help soothe and quiet the nursing infant, whether a puppy or a child. Gluten in wheat produces another peptide of the same size called gliadorphin. Grains like rye and barley contain similar prolamine proteins like gluten, and are assumed to yield bioactive peptides.

Peptide problems are more severe among individuals who have difficulty breaking down opiate peptides, which requires an enzyme nicknamed DPPIV. This enzyme can be inhibited by both yeast byproducts and mercury exposure. These incompletely digested peptides are then absorbed into the body and bind to opiate receptors – the physiological effect can alter behavior and contribute to lack of focus and attention, sleepiness, or even aggression and self-abuse can result.

Dr. Kalle Reichelt in Norway and Dr. William Cade at the University of Florida found high levels of the casomorphin peptide in urine samples from people with gastrointestinal, neurological, and movement disorders. Many parents have stated that before taking their child off of gluten and casein the child acted as if he/she were on hallucinogenic drugs. Children and adults with gastrointestinal, neurological, and movement disorders may incompletely digest wheat and dairy products. Because these peptides are so structurally similar, they are presumed to affect the brain similarly.

Both casomorphin and gliadorphin are composed of seven amino acids, which are abbreviated below. Both casomorphin and gliadorphin are 7-amino acid peptides which have a beginning N-terminal sequence tyr-pro (for tyrosine and proline) with additional pro in positions 4 and 6 of both peptides as indicated below. Similarities are indicated by bold print.

1 2 3 4 5 6 7
Casomorphin: **tyr-pro**-phe-**pro**-gly-**pro**-ile
Gliadorphin: **tyr-pro**-gln-**pro**-gln-**pro**-phe

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The problem arises if gluten and casein foods are consumed exclusively, which many children, particularly those on the autistic spectrum, would prefer to do. Individuals with gastrointestinal, neurological, and movement disorders frequently seem addicted to wheat and dairy products. They crave the foods that cause their problems. Dr. William Shaw remembers a mother complaining that her child would only drink milk.

Recommended for the following disorders:

- AD(H)D
- AIDS
- Alzheimer's Disease
- Arthritis
- Autism Spectrum Disorders
- Chronic Fatigue Syndrome
- Colitis & Crohn's Disease
- Depression
- Diarrhea/Constipation
- Down Syndrome
- Fibromyalgia
- Movement Disorders
- Multiple Sclerosis
- Obsessive-Compulsive Disorder
- Psychoses
- Schizophrenia
- Tic Disorder
- Tourette Syndrome

"Our services prove that we care about our client's continuous well-being and progress after doing our tests"

Gluten/Casein Peptides Test

For more information or to request a test kit, contact us
Phone: (913) 341-8949 Fax: (913) 341-6207 Toll Free: 1-800-288-0383
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Elimination of gluten and casein from the diet has been one of the more successful biomedical interventions in gastrointestinal, neurological, and movement disorders in alleviating GI symptoms associated with food sensitivity. GPL's peptide test is useful in determining whether or not an individual should be encouraged to undertake the GFCF (gluten-free, casein-free) diet. Restriction of gluten and casein from the diet has shown improvements in many cases of gastrointestinal, neurological, and movement disorders.

Because casein and gluten peptides function as opiates, a withdrawal reaction similar to that of a drug addict may occur when these foods are removed from the GFCF diet. For a child whose diet consists of mainly gluten and casein, it takes a lot of hard work and commitment to implement the diet. **Because the diet is so demanding, it is ideal to be certain that someone has the peptide problem before starting the diet. This is where testing for peptides can be very helpful.** For more information regarding the GFCF diet and tips on how to start on the diet, go to the TACA (Talk About Curing Autism) website: www.talkaboutcuringautism.org.

Finally, there is a simple and accurate urine peptide test that measures both gluten and casein peptides using the specificity of the ELISA method. This test is superior to any other laboratory test because it measures exact amounts of both casomorphin and gliadorphin. The urinary peptide test offered by The Great Plains Laboratory, Inc. is a very useful tool in the treatment of gastrointestinal, neurological, and movement disorders.

Symptoms of abnormal gluten and casein peptides are: cravings for gluten and casein products; intestinal problems after eating gluten and casein; concentration problems; aggressiveness; and feelings of being "spaced out". If you suspect that you or someone you know has abnormal levels of peptides, you can contact The Great Plains Laboratory, Inc. to obtain a test kit.

Testing Procedure

1. Contact The Great Plains Laboratory, Inc. via phone, fax, e-mail, or on our website to order a test kit.
2. Fill out the Test Requisition Form, have this form signed by a medical practitioner.
3. Indicate the payment method or insurance information on the Test Requisition Form.
4. Follow the instructions to collect the sample.
5. Send the sample with the paperwork in the pre-paid express overnight envelope included in the test kit (shipping cost is included in the price for U.S. clients).
6. The results will be mailed with a detailed explanation to the patient and medical practitioner in approximately one to three weeks after receiving your sample, unless the practitioner has specified otherwise.
7. A free phone consultation with our nutritional consultant is available to practitioners and patients upon request.

Sample Lab Report

The Great Plains Laboratory, Inc.

William Shaw, Ph.D Director 11813 W. 77th Street, Lenexa, KS 66214 (913) 341-8949 Fax (913) 341-6207

Requisition #
Patient Name
Patient Age
Patient Sex

Physician Name
Collection Date
Collection Time
Report Date

Urinary Peptides Final Report

Peptides	Peptides ng/ml	Creatinine mg/dl	Ratio*	Normal Ratio	
Casomorphin (Milk)	111	89	1.25	<.95	H
Gliadorphin (Wheat)	212	89	2.38	<.95	H

*Normal results for the peptide creatinine ratios have a biphasic distribution, so the normal ranges have been calculated as the median plus or minus one standard deviation. The new range should be more clinically useful, as the use of the ratios allows for the correction of different fluid intakes.

If either of the peptide results is abnormal, a gluten-free and casein-free diet should be considered for the person who was tested. If both peptide results are normal, further testing with IgG food allergy tests should be done before adopting a diet containing gluten and/or casein. If both peptide and IgG food allergy tests are normal, then the person can probably tolerate gluten and casein but a one-month elimination diet trial without these foods might still be useful.

Children on gluten and/or casein free diets may have normal values of the peptides in urine. Children with high values may benefit from gluten/casein free diets and/or peptidase supplementation. Children with normal peptide values may still have wheat and/or milk allergies that can be detected by allergy tests.

People on a diet containing soy proteins or who are consuming soy "milk" may also have high peptides in their urine. Soy proteins are used as emulsifiers, extenders, binders and stabilizers in meat, poultry, snack foods, sausage, frozen spaghetti, and whipped toppings. Textured vegetable protein (TVP) is soy based and many meat substitutes are soy-based. We have found that individuals on soy may have high values for gliadorphin and/or casomorphin presumably because of peptides from soy that are similar or identical to those in gluten or casein (Zhang XZ, Wang HY, Fu ZQ, WuXX, XuGL. Bioactive small peptides from soybean protein. Ann N Y Acad Sci 1998 Dec 13; 864: 640-5).

Individuals on peptidases such as Serenade or Enzymade may have high peptide values in the urine. This does not mean that these

Gluten/Casein Peptides Test

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