



Sample Report IMM11A

CLIENT #: 38596

DOCTOR:

Regenerus Laboratories Ltd

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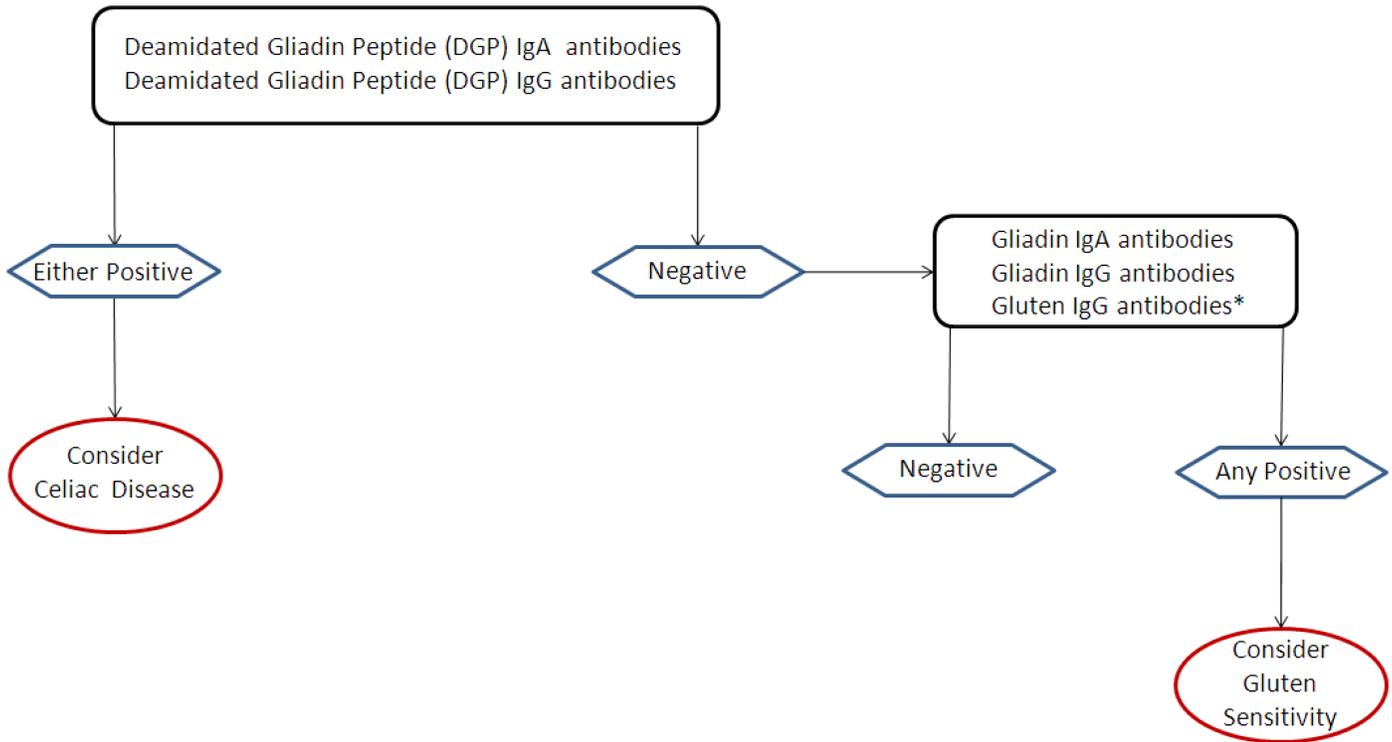
DOB: 11/03/1979

AGE: 39

*Celiac & Gluten Sensitivity; blood spot*

ANTIBODIES					
	RESULT/UNIT	REFERENCE INTERVAL	NEG	WEAK POS	POSITIVE
Deamidated Gliadin Peptide (DGP) IgA	< 5.2 U	< 20.0			
Deamidated Gliadin Peptide (DGP) IgG	< 2.8 U	< 20.0			
Gliadin (AGA) IgA	6.0 U	< 20.0	■■■■		
Gliadin (AGA) IgG	5.0 U	< 20.0	■■■■		
Gluten IgG*	1.0 µg/mL	< 3.0	■■■■		

Celiac Disease/Gluten Sensitivity Cascade



SPECIMEN DATA

Comments:

Date Collected: 04/29/2019

Date Received: 05/01/2019

Date Completed: 05/06/2019

Method: Immunoassay

<dl: less than detection limit

\*Gluten IgG assay is for research use only. Not for use in diagnostic procedures.

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### Introduction

Celiac disease (CD) is one of the most common causes of chronic malabsorption and may contribute to a wide variety of chronic conditions including autoimmune disorders and nutritional deficiencies. Celiac disease remains underdiagnosed, as the condition is often asymptomatic for years.

Antibody tests that help diagnose CD and Non-Celiac Gluten sensitivity (NCGS) measure the patient's immune response to gluten exposure; the tests will only be diagnostically accurate if the patient is on a gluten-inclusive diet.

Evaluation of antibodies (tissue transglutaminase and deamidated gliadin peptide) in CD is based on detection of IgA class immunoglobulins. However the incidence of selective IgA deficiency is higher in CD, therefore this test also evaluates the corresponding IgG antibodies.

Patients diagnosed with CD must remain on a gluten-free diet for life and avoid wheat, rye, barley, and other foods that contain gluten and gluten related proteins. A complete list of foods containing wheat may be found at [www.doctorsdata.com](http://www.doctorsdata.com) under "Hidden Sources of Ingredients".

The Doctor's Data Comprehensive Stool Analysis would include all of these tests plus additional biomarkers of digestive health and gastrointestinal function.

### References:

American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of Gastroenterology* vol. 108 (5) p. 656-76; quiz 677.

Sapone, Anna; Lammers, Karen; Casolaro, Vincenzo; Cammarota, Marcella; Giuliano, Maria et al. (2011) Divergence of gut permeability and mucosal immune gene expression in two gluten-associated conditions: celiac disease and gluten sensitivity. *BMC Medicine* vol. 9 (1) p. 23.

Mothes, Thomas. (2007) Deamidated gliadin peptides as targets for Celiac disease-specific antibodies. *Advances in Clinical Chemistry* vol.44 p. 44.

### Deamidated Gliadin Peptide (DGP) Antibody Negative

The anti-deamidated gliadin peptide (DGP) IgA or IgG results are within normal limits. Celiac disease is associated with a variety of autoantibodies, including tissue transglutaminases (tTG), and deamidated gliadin antibodies; these are considered the most sensitive and specific serologic tests for CD. Antibody responses to deamidated gliadin peptide show high specificity and parallel tTG responses in CD.

A negative DGP IgA antibody result does not exclude an indication of CD in patients who have selective IgA deficiency, or have been following a gluten-free diet because antibody levels decrease over time. Responses to a gluten-free diet (GFD) vary however, research indicates that weakly positive individuals may become serology-negative within weeks of strict adherence to GFD. Within 6-12 months of adhering to a GFD, 80% of patients will test negative by serology. After five years, more than 90% of patients adhering to the GFD will have negative serologies.

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This test result alone is not diagnostic for absence of Celiac disease. The results should be considered in conjunction with the patient's symptoms, immune status, diet, genetic predisposition and medical history.

#### References:

American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Ankelo, M; Kleimola, V; Simell, S; Simell, O; Knip, M et al. (2007) Comparative Usefulness of Deamidated Gliadin Antibodies in the Diagnosis of Celiac Disease Antibody responses to deamidated gliadin peptide show high specificity and parallel antibodies to tissue transglutaminase in developing celiac disease. *Clinical and experimental immunology* vol. 150 (2) p. 285-93.

Parizade, Miriam; Bujanover, Yoram; Weiss, Batya; Nachmias, Vered; Shainberg, Bracha (2009) Performance of serology assays for diagnosing celiac disease in a clinical setting. *Clinical and vaccine immunology : CVI* vol. 16 (11) p. 1576-82.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of gastroenterology* vol. 108 (5) p. 656-76; quiz 677.

Vermeersch, Pieter; Geboes, Karel; Mariën, Godelieve; Hoffman, Ilse; Hiele, Martin et al. (2010) Diagnostic performance of IgG anti-deamidated gliadin peptide antibody assays is comparable to IgA anti-tTG in celiac disease. *Clinica chimica acta; international journal of clinical chemistry* vol. 411 (13-14) p. 931-5.

Wang, Ning; Truedsson, Lennart; Elvin, Kerstin; Andersson, Bengt A; Rönnelid, Johan et al. (2014) Serological assessment for celiac disease in IgA deficient adults. *PloS one* vol. 9 (4) p. e93180.

#### Gliadin Antibody Negative

The serum level of anti-gliadin antibody (AGA) IgA, IgG or both is within normal limits.

Gluten sensitivity is defined as a gluten reaction that is independent of the IgE reactions of wheat allergy and autoantibody reactions of Celiac disease. In at least 50% of cases, elevated IgA and IgG AGA may be the only serological biomarker in cases of dermatitis herpetiformis or gluten ataxia. Studies have shown that patients with autism, Multiple Sclerosis or schizophrenia are more likely to have elevated IgA AGA levels and that these patients are more likely to have adverse responses to dietary gluten. Whole purified gliadin that contains the alpha, omega, beta and gamma isoforms is used in the assay.

The absence of an antibody response does not eliminate the intrinsic toxicity of gluten, which has been associated in non-Celiac individuals with extra-intestinal damage to tissues, organs and systems in the body. A negative AGA IgA antibody result does not exclude a possibility of gluten sensitivity in patients who have selective IgA deficiency, or have been following a gluten-free diet because antibody levels decrease over time.

#### References:

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American Association for Clinical Chemistry (2011) Celiac Disease Tests <http://labtestsonline.org/> accessed 15 May 2014.

Nelsen, Davis A. Jr., M.D., M.S., (2002) Gluten-Sensitive Enteropathy (Celiac Disease): More Common Than You Think. *Am Fam Physician*. 2002 Dec 15;66(12):2259-2266.

Pietzak, Michelle (2012) Celiac Disease, Wheat Allergy, and Gluten Sensitivity: When Gluten Free Is Not a Fad. *JPEN J Parenter Enteral Nutr* vol. 36 (1\_suppl) p. 68S-75S.

Sapone, Anna; Lammers, Karen; Casolaro, Vincenzo; Cammarota, Marcella; Giuliano, Maria et al. (2011) Divergence of gut permeability and mucosal immune gene expression in two gluten-associated conditions: celiac disease and gluten sensitivity. *BMC Medicine* vol. 9 (1) p. 23.

Rubio-Tapia, Alberto; Hill, Ivor D; Kelly, Ciarán P; Calderwood, Audrey H; Murray, Joseph A (2013) ACG clinical guidelines: diagnosis and management of celiac disease. *The American journal of gastroenterology* vol. 108 (5) p. 656-76; quiz 677.

#### Immunoglobulin G (IgG) Gluten Negative

The level of IgG to gluten is within normal limits for this sample, and may indicate normal intestinal permeability and digestion. Intolerance occurs if the body cannot properly digest or assimilate gluten. A negative result to foods usually indicates tolerance and a healthy gastrointestinal tract, free of any permeability issues. A negative result in a symptomatic patient may occur for one of the following reasons:

- Gluten has not been consumed in the last 4-6 weeks (test results are only accurate when the patient is on a gluten inclusive diet)
- The production of IgG has been suppressed by medication (steroids in the last 6 weeks, or other immunosuppressant drugs)
- The symptom response is not IgG related; a negative IgG test does not rule out environment or pollen-related IgE food cross-reactions, digestive insufficiencies or other adverse food reactions.
- The patient may have an IgG subclass or other immune deficiency.

#### References:

Alpay, Kadriye; Ertas, Mustafa; Orhan, Elif Kocasoy; Ustay, Didem Kanca; Lieners, Camielle et al. (2010) Diet restriction in migraine, based on IgG against foods: A clinical double-blind, randomised, cross-over trial. *Cephalalgia* vol. 30 (7) p. 829-837.

Bentz, S.; Hausmann, M.; Piberger, H.; Kellermeier, S.; Paul, S. et al. (2010) Clinical Relevance of IgG Antibodies against Food Antigens in Crohn's Disease: A Double-Blind Cross-Over Diet Intervention Study. *Digestion* vol. 81 (4) p. 252-264

Nelsen, David A. Jr., M.D., M.S., (2002) Gluten-Sensitive Enteropathy (Celiac Disease): More Common Than You Think. *Am Fam Physician*. 2002 Dec 15; 66 (12): 2259-2266.

Pietzak, Michelle (2012) Celiac Disease, Wheat Allergy, and Gluten Sensitivity: When Gluten Free Is Not a Fad. *JPEN J Parenter Enteral Nutr* vol. 36 (1\_suppl) p. 68S-75

Sapone, Anna; Lammers, Karen; Casolaro, Vincenzo; Cammarota, marcella; Giuliano, Maria et al. (2011) Divergence of gut permeability and mucosal immune gene expression in two gluten-associated conditions: celiac disease and gluten sensitivity. BMC Medicine vol. 9 (1) p. 23