

Manual

Anti-Gliadin sIgA / IgA

ELISA

For the determination of anti-gliadin sIgA / IgA in stool

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IC6300

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1. Intended use

The *ImmuChrom* ELISA Kit is intended for the quantitative determination of anti-gliadin sIgA / IgA in stool. For research use only.

2. Introduction

In the case of gluten intolerance, the body reacts hypersensitively to the gluten proteins (gliadin and glutenin) that are present in grain. 80-90% of patients have atypical or no symptoms and often do not know anything about their disease. In people with celiac disease, the intake of gluten leads to inflammation of the intestinal mucosa. The intestinal villi recede. Since the diseased intestinal mucosa can no longer absorb enough nutrients, a vitamin and mineral deficiency can occur. Hereditary factors play an important role in celiac disease (95% of patients have the HLA-DQ2 and HLA-DQ8 genes; up to 5% have the HLA-DR4 gene), but the immune system and environmental factors also influence its development. Women get sick more often than men. According to the German Celiac Society, more recent screening tests show that the frequency of the disease is now between 1:100 and 1:200.

Antibodies against transglutaminase and/or gliadin can be detected in patients with gluten enteropathy. These antibodies can be detected regardless of whether the disease is manifest or silent or latent. In contrast to manifest gluten enteropathy, silent or latent forms do not show any atrophy of the villi of the small intestine, but pronounced intestinal or extraintestinal symptoms can still be present.

The detection of anti-gliadin sIgA / IgA in the stool is suitable for screening and therapy monitoring. Elevated titers are not evidence of celiac disease, especially if it is only moderately elevated. In many cases, an allergic sensitization to gluten appears to occur (2). Evidence of celiac disease is provided by a histological finding of villous atrophy.

Applications

- Food intolerance
- Monitoring of an elimination diet

3. General notes, warnings and precautions

This assay was produced and put on the market for research use only.

Individual components from different batches and test kits should not be interchanged. The expiry dates stated on the relevant packaging must be observed.

The test kit reagents contain preservatives to protect against bacterial growth. Therefore contact with the skin and/or mucous membranes should be avoided.

The test kit contains components of human origin. The starting reagents were tested for antibodies against HIV1/2, hepatitis B and anti-HCV using immunoassay methods. All parameters tested were found negative. As a precautionary measure, all test kit reagents should always be treated as potentially infectious material in accordance with health care accident prevention regulations.

The substrate TMB (tetramethylbenzidine) is toxic by ingestion and skin contact. In the event of contact with the skin, the affected area must be washed immediately with plenty of water and soap.

Avoid contact of the stop solution, which consists of acid, with the skin. It causes burns on contact. You should therefore work with protective gloves and goggles. In the event of contact, the burned area must be immediately and thoroughly rinsed with plenty of water. If necessary, a doctor should be consulted.

Adherence to the prescribed protocol for performing the test is essential. ImmuChrom GmbH assumes no liability for any damage caused by unauthorized changes in the test procedure.

The guidelines for carrying out quality control in medical laboratories must be observed. Appropriate controls must be carried along.

The reagents must not be used after the expiration date.

Wear disposable gloves when handling specimens or kit reagents and wash hands thoroughly afterwards. Do not pipette by mouth. Do not eat, drink, smoke, or put on makeup in areas where specimens or kit reagents are being handled.

Samples may contain unknown interfering substances. This can lead to false high or false low results.

4. Material delivered in the test package

Article no.	Compont	Description	Amount
IC6300mtp	MTP	Mikrotiterplate coated	12 x 8 wells
IC6300wp	WASHBUF	Anti-gliadin / anti-transglutaminase ELISA washbuffer conc. 10 fold	100 ml
IC6300pb	SAMPLEBUF	Samplebuffer	500 ml

IC6300st	STD	Standard (0.5 ml) The concentrations are given in the specification	4 vials
IC6300ko	CTRL	Controls (2 level, 0.5 ml) The concentrations are given in the specification	1 vial each
IC6300kg	CONJ	Conjugate, peroxidase-labeled antibody	15 ml
IC6000su	SUB	TMB substrate (tetramethylbenzidine)	15 ml
IC6300sp	STOPP	Stop solution	10 ml

5. Additional special equipment

- Centrifuge, 3000xg
- Plastic vials
- Stool sample extraction vials
- Vortex mixer
- Various pipettes
- Multichannel- or multipipette
- Foil to cover the microtiter plate
- Bidest. water
- ELISA reader with filter 450 nm (reference filter 620)
- Microtiter plate shaker

6. Reagent preparation

Microtiter plate (MTP). Take the needed number of stripes and assemble them on the holder. Please take care that the plate has reached room temperature before usage. Stripes which are not needed yet must be stored at 2-8°C. Please do not dispose of the holder until all stripes are used.

Wash buffer (WASHBUF). Dilute the wash buffer concentrate 1:10 with bidest. water (1 part buffer + 9 parts bidest. water). The dilution is stable for 14 days at 2-8°C.

Important: When storing the wash buffer concentrate at 2-8°C crystallization may occur. Before dilution, all crystals must be dissolved.

It is recommended to dilute only the amount of buffer which is used to process the given samples.

Standards (STD) and controls (CTRL): The standards and controls are ready to use, and are stable at -16°C up to the expiry date given on the label. A small volume (~0.5 µl) of the 1:10 diluted wash buffer concentrate should be reserved and used further as **Standard 0** (please, refer to step 2 of “Sample preparation” for the amount to be pipetted).

All other test reagents are stable at 2-8 °C up to the date of expiry stated on the label,

7. Specimen

Stool samples

The antibodies are extracted by the sample buffer out of the stool sample in a ration of 1:50 (e.g. 20 mg/ml).

Extraction in Stool extraction vials

For the extraction stick vials could be used.

We recommend to mix **15 mg** stool with **0.75 ml** SAMPLEBUF, then vortex it until the mixture is homogenous. Transfer the resulting slurry to a plastic vial and centrifuge it for 10 min at 3000xg.

The supernatant is directly pipetted into the microtiter plate wells with no further dilution (please, refer to step 2 of “Sample preparation” for details).

8. Procedure

Principle of the method

The anti-gliadin-ELISA test determines human anti-gliadin sIgA / IgA antibodies according to the “sandwich”-principle. Anti-gliadin antibodies in sample, standard and controls bind to gliadin, which is coated to the microtiter plate. After a washing step a peroxidase labeled detection antibody is added. A second washing step is followed by the addition of the substrate which is converted to a colored product by the peroxidase. The reaction is terminated by the addition of an acidic stop solution. The optical densities are measured at 450 nm (against the reference wavelength 620 nm) in a microtiter plate reader. The anti-gliadin concentration can be calculated from the standard curve.

Calibration: Calibration was done in relative units as no higher order reference material is available.

Sample preparation

All reagents and samples should have room temperature (20-30°C) and should be mixed well before use.

The position of standards, controls and samples should be noted down in advance on a protocol sheet.

1. Washing step

Pick out the pre-assembled microtiter plate with the needed number of stripes and wash them 1x with 250 µl diluted WASHBUF. Remove residual buffer by tapping the plate on absorbent paper after the washing step.

2. Samples incubations

Pipette **100 µl STD, CTRL** or the supernatant of the **samples** in double values into the microtiter plate. For standard 0 use 100 µl of the diluted WASHBUF per well.

Cover the stripes with a cover film and incubate the microtiter plate by shaking for **60 min** (20-30 °C, 400 rpm; 2 mm orbit).

3. Washing step

Discard the content of the microwells and wash 5x with 250 µl diluted WASHBUF. Remove residual buffer by tapping the plate on absorbent paper after the last washing step.

4. Conjugate incubation

Pipette **100 µl CONJ** in each microwell.

Cover the stripes with a cover film and incubate the microtiter plate by shaking for **60 min** (20-30 °C, 400 rpm; 2 mm orbit).

5. Washing step

Discard the content of the microwells and wash 5x with 250 µl diluted WASHBUF. Remove residual buffer by tapping the plate on absorbent paper after the last washing step.

6. Substrate incubation

Pipette **100 µl SUB** in each microwell.

Incubate for **10-15 min** by shaking in the dark (20-30 °C, 400 rpm; 2 mm orbit).

7. Stopping reaction

Pipette **50 µl STOPP** in each microwell. Mix well.

8. Reading

Read the absorbance at 450 nm. If the microtiter plate reader allows to use a reference wavelength use 620 as reference wavelength.

Reading should be done within 5 min after stopping reaction.

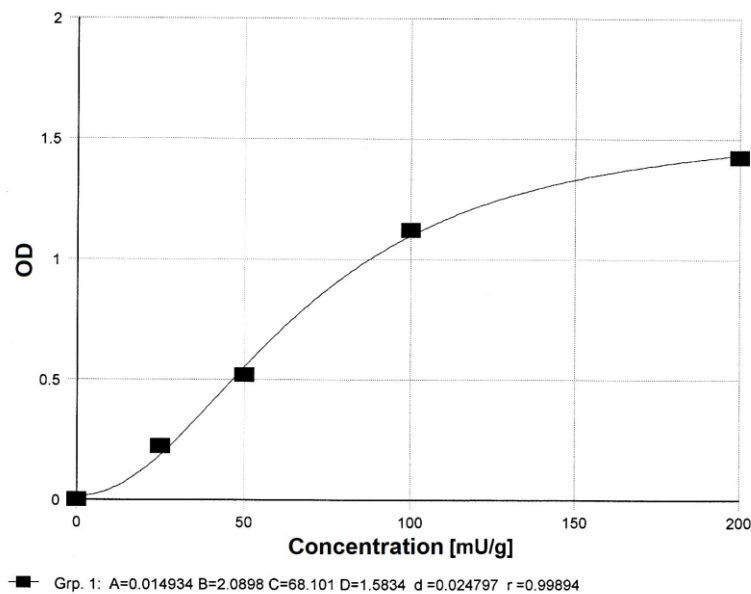
9. Calculation of analytical results

For calculating the results, we recommend to use the 4-parameter algorithm.

Stool samples

The anti-gliadin concentration is read from the standard curve.

Standard curve



The curve given above is only for demonstration. It must not be used for calculation of your samples

10. Internal quality control

Reference values

< 100 mU/g

(Source: Martin (Hrsg.), Das Standardlabor in der naturheilkundlichen Praxis, 4. Auflage, 2014 ISBN 978-3-437-56303-4)

We recommend, that each laboratory should develop their own normal range. The values mentioned above are only for orientation and can deviate from other published data.

11. Validation data

Measuring range

The measuring range of the anti-Gliadin sIgA / IgA is between a sample concentration of 25 mU/g and 200 mU/g

Precision and reproducibility

Intra-Assay CV:	3.7 % (21.5 mU/g)	[n = 10]
	4.6 % (47.0 mU/g)	[n = 10]
	3.1 % (79.7 mU/g)	[n = 10]
Inter-Assay CV:	9.2 % (22.5 mU/g)	[n = 10]
	9.3 % (48.0 mU/g)	[n = 10]
	8.8 % (83.5 mU/g)	[n = 10]

Detection limit

2.1 mU/g

For the determination the zero-standard was measured 20 times. The 2-fold standard deviation was added to the mean value of the optical density. The respective concentration was read from the standard curve.

Limit of quantification

4.6 mU/g

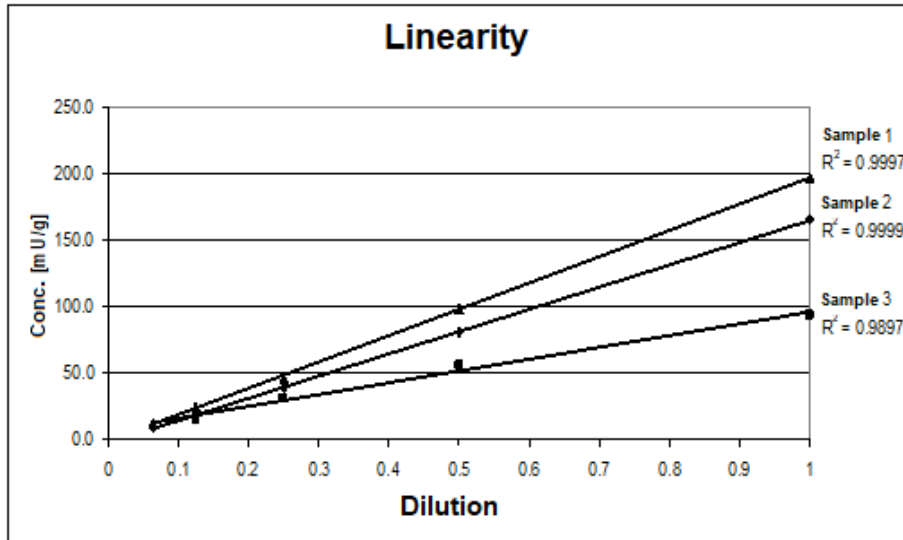
For the determination the zero-standard was measured 20 times. The 2-fold standard deviation was added to the mean value of the optical density. The respective concentration was read from the standard curve.

Linearity

The dilution of the samples is performed with sample buffer.

Sample	Dilution factor	Expected [mU/g]	Measured [mU/g]	Recovery [%]
1	--	--	165.6	
	1:2	82.8	80.4	97.1
	1:4	41.4	39.1	94.4
	1:8	20.7	19.3	93.2
	1:16	10.4	8.9	86.0
2	--	--	93.4	
	1:2	46.7	56.0	119.9
	1:4	23.4	31.0	132.8
	1:8	11.7	15.5	132.8

3	--	--	196.3	
	1:2	98.2	98.5	100.4
	1:4	49.1	46.3	94.3
	1:8	24.5	25.0	101.9
	1:16	12.3	11.3	92.1



Recovery

Sample	Endogen [mU/g]	Added	Expected [mU/g]	Measured [mU/g]	Recovery [%]
1	11.4	20.0	31.4	29.4	93.6
		50.0	61.4	66.7	108.6
		75.0	86.4	87.4	101.2
2	10.8	20.0	30.8	28.3	91.9
		50.0	68.8	66.2	108.9
		75.0	85.8	84.1	98.0

Cross reactivity

Cross reactivities could not be determined in an autoantibody test

12. Limitations of the method

Stool samples with anti-gliadin antibody concentrations above the standard curve should be diluted with sample buffer (SAMPLEBUF) and measured again.

In the case of diarrhea, normal levels can be measured with increased antibody formation.

The detection of anti-gliadin sIgA / IgA in the stool is suitable for screening and therapy monitoring. Elevated titers are not evidence of celiac disease, especially if it is only moderately elevated. In many cases, an allergic sensitization to gluten appears to occur (2). Evidence of celiac disease is provided by a histological finding of villous atrophy.

Normal values are also measured in patients with gluten intolerance on a gluten-free diet.

13. Disposal

The substrate (SUB) must be disposed as non-halogenated solvent. The stop solution (STOPP) can be neutralized with NaOH and if the pH value is neutral, it can be disposed as salt solution (**important:** this reaction produces heat and should be handled carefully).

Please refer to the appropriate national guidelines.

14. Literature references

1. Martin et al (2000). Gastroenterologische Aspekte in der Naturheilkunde. ISBN 3-930620-29-4 S 213-214.
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4. Uhde M et al.: Intestinal cell damage and systemic immune activation in individuals reporting sensitivity to wheat in the absence of coeliac disease. Gut. 2016 Dec;65(12):1930-1937. doi: 10.1136/gutjnl-2016-311964. Epub 2016 Jul 25.
5. Kappler, M et al.: Detection of secretory IgA antibodies against gliadin and human tissue transglutaminase in stool to screen for coeliac disease in children: validation study; BMJ Volume 332, 28 January 2006
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