RIDA® CCD-Inhibitor

Reliable inhibition of IgE antibodies against cross-reactive carbohydrate determinants (CCD) in RIDA qLine® Allergy testing

CCDs (cross-reactive carbohydrate determinants) are carbohydrate side chains inducing the production of specific IgE antibodies

A Type I allergy is caused by the formation of specific IgE antibodies against allergens. Most allergens are proteins. In eucaryotic organisms, many proteins are subjected to post-translational glycosylation and therefore carry carbohydrate side chains. Specific IgE antibodies are produced by the immune system against the real allergens but also against carbohydrate side chains of allergens (anti-CCD IgE) of plant origin, of insects, of molluscs and of latex. The anti-CCD IgE also leads to cross-reactions with unrelated proteins and therefore are called **"cross-reactive carbohydrate determinants (CCD)"**.

CCDs do not cause allergic symptoms

Approximately 25 % of allergic patients produce anti-CCD IgEs, which, however, do not trigger allergic symptoms and therefore most likely have no clinical relevance. This low clinical significance was thought to be due to low binding affinity of anti-CCD IgE and/or poor biologic activity of these antibodies. Low binding affinity could be excluded by experiments from *Jin et al.*[1] where binding affinities of anti-CCD IgE and IgG were determined and turned out to be quite high.

It was also shown that anti-CCD IgG exhibited a stronger binding affinity than IgG directed against peptides. As the anti-CCD IgE titers in the sera of most patients were low it was assumed that IgG against-CCDs in allergic patients may act as blocking antibodies by competing with IgE for CCDs and hence prevent the binding of the IgE antibodies to CCDs and the development of clinical symptoms.

Specific IgE against CCDs are detected by in vitro assays and lead to "false" positive results

It was suggested that the detection of anti-CCD IgE in RAST-tests is due to monovalent binding of IgE to parts of the glycan epitopes which *in vivo* would not be sufficient to activate mast cells or basophiles and lead to clinical symptoms.
As these cross-reactions produce positive results in *in vitro* laboratory test systems, they must be considered false positive. These false positive results lead frequently to discrepancies between skin prick test results and laboratory test results. In order to correctly distinguish between true positive and false positive results, anti-CCD IgE antibodies should be inhibited to prevent binding to the CCDs in *in vitro* test.

False positive *in vitro* results which are caused by the binding of specific IgE antibodies to CCDs are prevented by the inhibition of IgEs against CCDs with the **RIDA® CCD-Inhibitor.**

[1] *Jin, C., et al.,* Affinity of IgE and IgG against cross-reactive carbohydrate determinants on plant and insect glycoproteins. J Allergy Clin Immunol, 2008. 121(1): p. 185-190 e2.

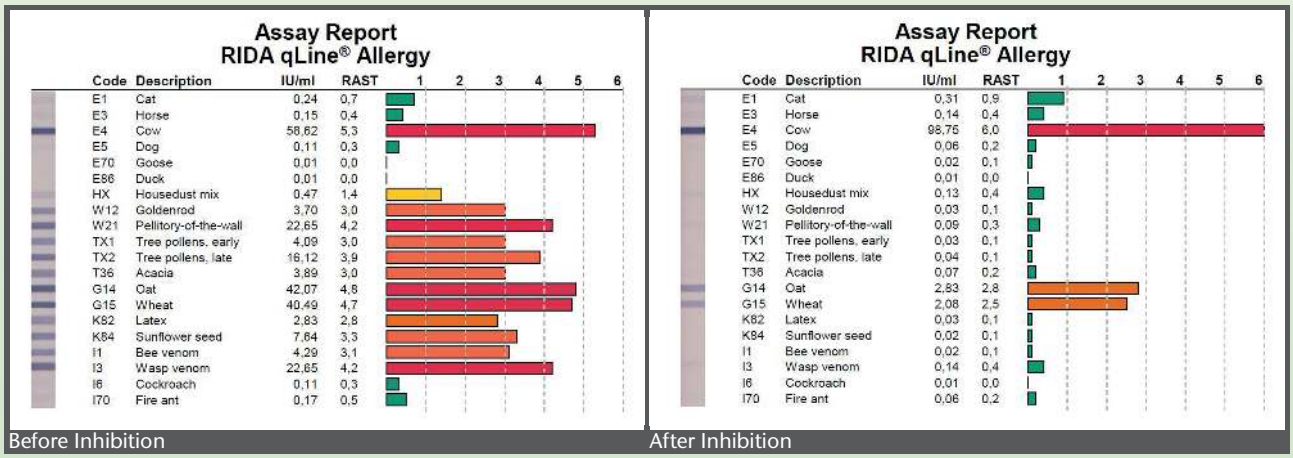
Number of positive and negative results before and after treatment of patients' serum with **RIDA® CCD-Inhibitor**

	Before CCD	After CCD
Positive (≥ RAST 1)	86	27
Negative (< RAST 1)	94	153
Total	180	180

Indication for the use of RIDA® CCD-Inhibitor

Occurrence of positive reactions to a high number of allergens for a specific sample in the *in vitro* test system but also discrepancies between skin prick test and serological test results are indicative of false positive reactions caused by anti-CCD IgE antibodies. In these cases it is recommended to treat the serum with the RIDA® CCD-Inhibitor and to repeat the test.

Example of a patient, tested with RIDA qLine® Panel 1 HVEN, before and after anti-CCD IgE inhibition



Before Inhibition | After Inhibition

Description of the RIDA® CCD-Inhibitor

Glycopeptides containing a maximum of four amino acid residues are purified from the plant glycoprotein bromelain and coupled to human serum albumin. This ensures absence of protein-based IgE epitopes and hence maximum specificity.

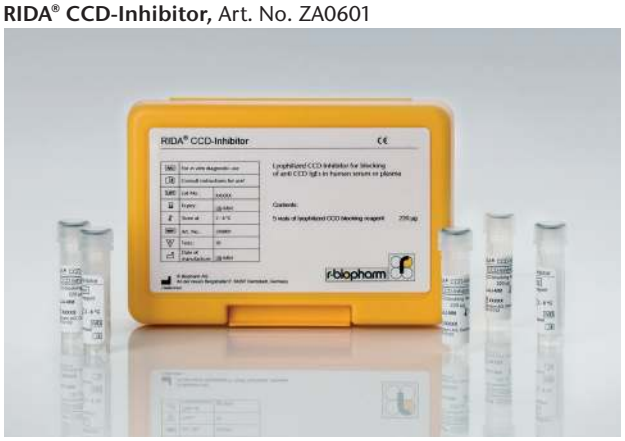
Test procedure

- Dissolve the lyophilisate with 55 µl bidest. H_2O.
- Centrifuge it briefly to ensure that no liquid remains in the cap.
- Pipet 10 µl of the dissolved RIDA® CCD-Inhibitor to 400 µl of serum or plasma, shake, and incubate for one hour at RT while shaking.
- The treated serum or plasma must be tested immediately after incubation.

Order information

Product	Description	Tests	Matrix	Art. No.
	Accessory			
RIDA® CCD-Inhibitor	Accessory for the inhibition of false positive results by cross-reactive anti-CCD IgE in human serum and plasma in in vitro diagnosticsa	25	Serum/ plasma (citrate)	ZA0601

RIDA® CCD-Inhibitor, Art. No. ZA0601



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