



**Comprehensive allergy diagnostics**

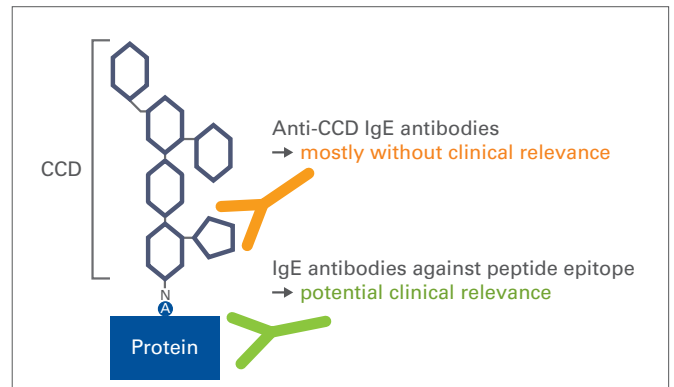
# Anti-CCD\* Absorbent

**Fewer cross reactions – increased specificity**

\* CCD: Cross-reactive carbohydrate determinants

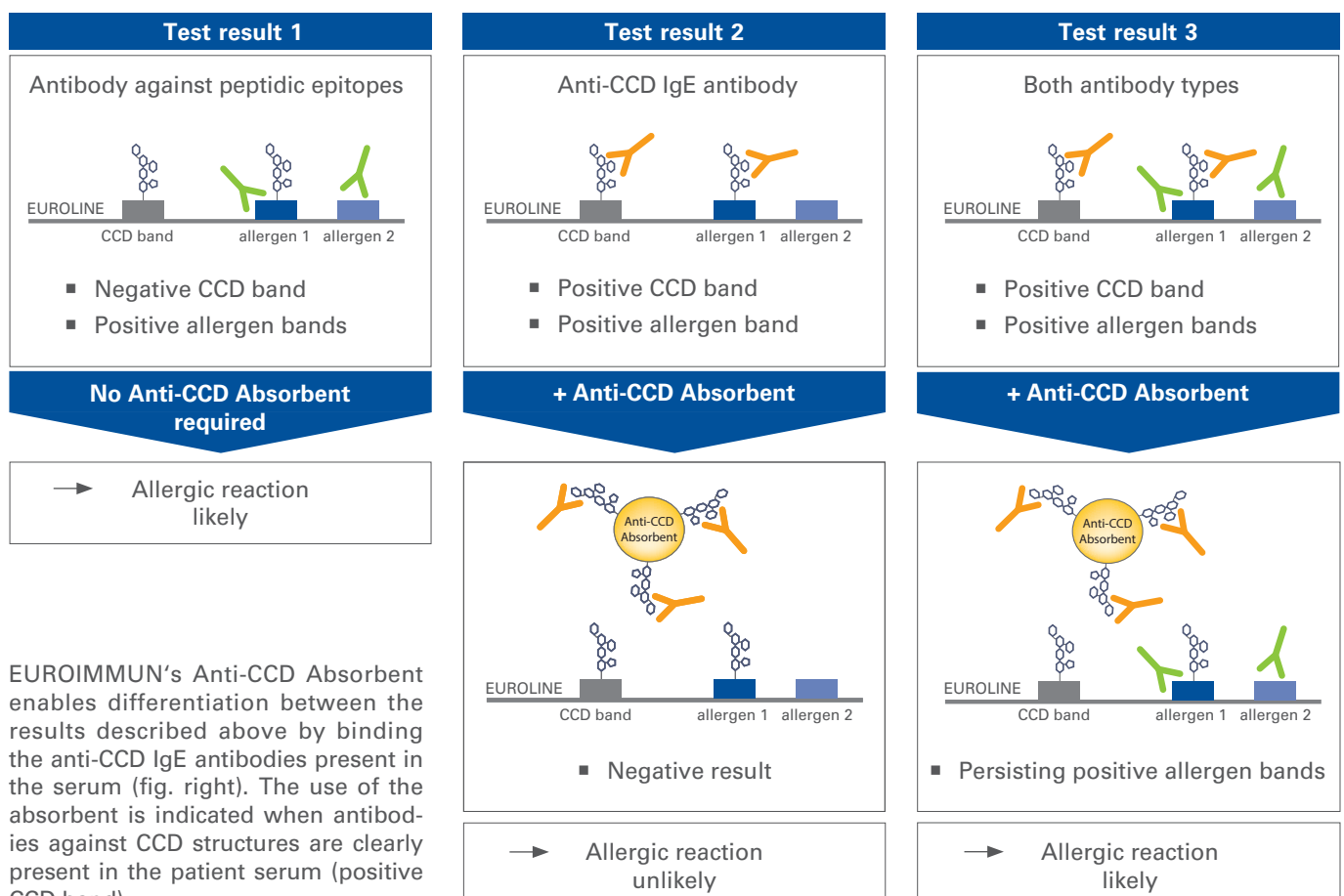
## Antibodies against cross-reactive carbohydrate determinants (anti-CCD IgE antibodies)

**Cross-reactive carbohydrate determinants (CCDs)** are sugar structures which are attached to proteins during post-translational glycosylation. CCD structures of glycosylated proteins from plants or invertebrates differ from those of human glycoproteins and are therefore immunogenic. At the first contact with a glycosylated allergen, specific IgE antibodies against the protein as well as against the CCD structures are formed (anti-CCD IgE antibodies, fig. right).<sup>1</sup> Due to the high structural similarity of the CCDs of different species, anti-CCD IgE antibodies present cross reactions to glycoproteins from insects, crustaceans and molluscs, plant pollen, fruit and latex.



## Anti-CCD IgE antibodies and their relevance for in vitro allergy diagnostics

Anti-CCD IgE antibodies are detectable in around 25% of allergy patients, but also in non-allergic individuals.<sup>1, 2</sup> They usually do not have any clinical relevance. In extract-based in vitro allergy diagnostics, the occurrence of these antibodies hinders the interpretation of positive results, since it is not possible to distinguish between reactions due to antibodies against peptidic epitopes (1), anti-CCD IgE antibodies (2), or both antibody types (3). With recombinantly produced allergen components, CCD interactions do not occur.

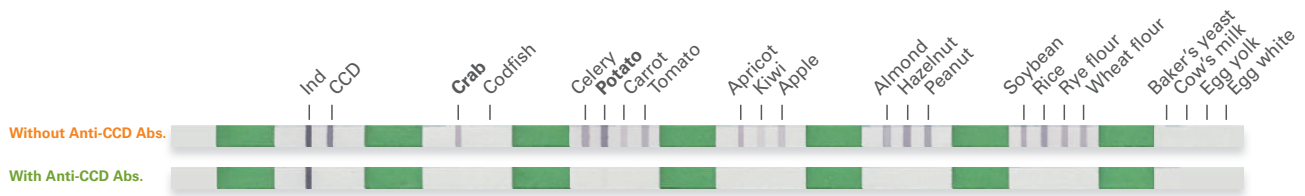


EUROIMMUN's Anti-CCD Absorbent enables differentiation between the results described above by binding the anti-CCD IgE antibodies present in the serum (fig. right). The use of the absorbent is indicated when antibodies against CCD structures are clearly present in the patient serum (positive CCD band).

## Case example

By using the Anti-CCD Absorbent from EUROIMMUN, reactions resulting from CCDs are eliminated. This increases the diagnostic specificity and therefore allows assessment of the actual sensitisation status of the patient.

### Case example for test result 2



Allergen	Concentration	EAST class	0	1	2	3	4	5	6
CCD	73 kU/l <0.35 kU/l	5 0							
Crab (f23)	28 kU/l <0.35 kU/l	4 0							
Potato (f35)	64 kU/l <0.35 kU/l	5 0							

Excerpt from the test evaluation

#### Result without Anti-CCD Absorbent

Positive results for the majority of tested foods.

#### Conclusion:

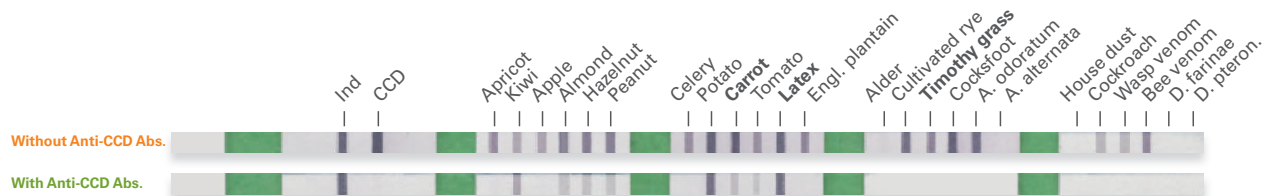
→ According to the test results obtained without Anti-CCD Absorbent, the patient would need to unnecessarily avoid a large number of foods.

#### Result with Anti-CCD Absorbent

Negative results for the foods that previously tested positive.

→ Owing to the use of EUROIMMUN's Anti-CCD Absorbent, anti-CCD IgE antibodies could be removed and the diagnosis specified. The patient is not sensitised to any of the tested foods.

### Case example for test result 3



Allergen	Concentration	EAST class	0	1	2	3	4	5	6
CCD	91 kU/l <0.35 kU/l	5 0							
Carrot (f31)	58 kU/l 0.52 kU/l	5 1							
Latex (u85)	54 kU/l 54 kU/l	5 5							
Timothy grass (g6)	27 kU/l <0.35 kU/l	4 0							

Excerpt from the test evaluation

#### Result without Anti-CCD Absorbent:

Positive reaction to a large number of tested allergens.

#### Conclusion:

→ The patient should avoid the allergens with a positive result.

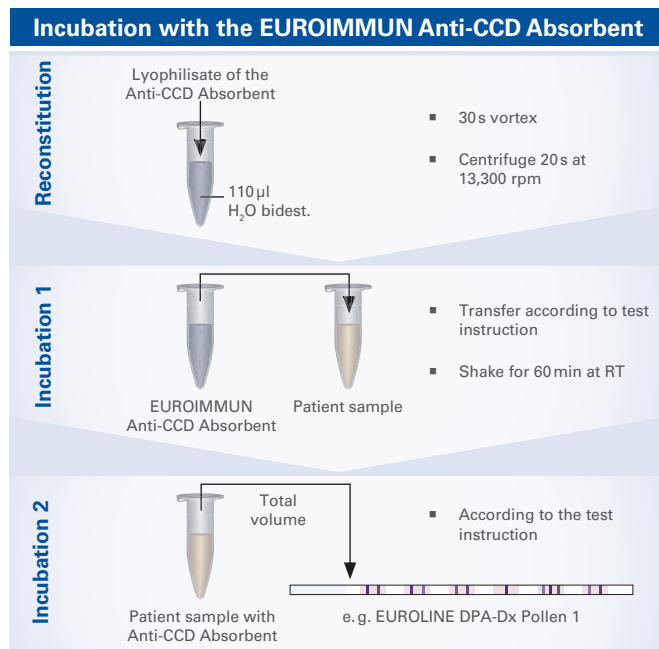
#### Result with Anti-CCD Absorbent:

Positive results sometimes show a clear reduction in EAST class (e.g. carrot) or are now negative (e.g. timothy grass). In some cases the test result remains unchanged (e.g. latex).

→ A differentiated diagnosis is enabled by inhibition of the anti-CCD IgE antibodies. The patient must avoid far fewer allergens than originally diagnosed.



## Incubation scheme



The Anti-CCD Absorbent lyophilisate must be reconstituted before use. For this, it is dissolved in 110 µl aqua bidest. and then vortexed for approx. 30 seconds and centrifuged at 13,300 rpm (minimum 20 s).

The Anti-CCD Absorbent is then pipetted into the patient sample (for volume information see test instruction). The sample is incubated for 60 minutes at room temperature (RT; +18 °C to +25 °C).

The next incubation is performed according to the instructions of the respective test system.

### At a glance

- IgE antibodies can be directed against cross-reactive carbohydrate determinants (CCDs) of glycosylated allergens (anti-CCD IgE antibodies). They usually have no clinical relevance.
- Anti-CCD IgE antibodies are strongly cross-reactive due to inter-species structural similarity of the CCDs.
- Anti-CCD IgE antibodies can lead to false-positive results in extract-based in vitro test systems. Actual positive results can only be evaluated after elimination of the anti-CCD IgE antibodies.
- EUROIMMUN's Anti-CCD Absorbent binds the anti-CCD IgE antibodies and thus increases the diagnostic specificity.