

Technical University of Denmark



Linear versus conformational epitopes of three cow's milk allergens

Bøgh, Katrine Lindholm; Madsen, Jeanette Lund; Kroghsbo, Stine; Madsen, Charlotte Bernhard; Barkholt, Vibeke

Published in:
Clinical and Translational Allergy

Link to article, DOI:
[10.1186/2045-7022-4-S2-P23](https://doi.org/10.1186/2045-7022-4-S2-P23)

Publication date:
2014

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):
Bøgh, K. L., Madsen, J. L., Kroghsbo, S., Madsen, C. B., & Barkholt, V. (2014). Linear versus conformational epitopes of three cow's milk allergens. *Clinical and Translational Allergy*, 4 (Suppl 2), [P23]. DOI: 10.1186/2045-7022-4-S2-P23

DTU Library

Technical Information Center of Denmark

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



POSTER PRESENTATION

Open Access

Linear versus conformational epitopes of three cow's milk allergens

Katrine Lindholm Bogh^{1*}, Jeanette Lund Madsen¹, Stine Kroghsbo¹, Charlotte Bernhard Madsen¹, Vibeke Barkholt²

From 5th International Symposium on Molecular Allergology (ISMA 2013)
Vienna, Austria. 6-7 December 2013

Background

Characterisation of epitopes, including relationship between linear and conformational epitopes, is an essential task for understanding the basic molecular mechanisms of food allergy.

The aim of this study was to investigate the importance of linear versus conformational antibody epitopes of the three cow's milk allergens; β -lactoglobulin (BLG), α -lactalbumin (ALA) and β -casein.

Method

Specific antibodies were raised in a Brown Norway (BN) rat model of food allergy. BN rats were dosed either (1) intraperitoneally (i.p.) with the purified native cow's milk allergens with or without the use of Al(OH)₃ as adjuvant or (2) orally with skimmed milk powder without the use of adjuvant. The specific IgG1 and IgE antibody responses were analysed against native and denatured allergens by means of different ELISAs.

Results

A decrease in antibody reactivity towards the denatured allergen compared to the native allergen was seen for all three cow's milk proteins, independent of the administration route. This shows an importance of conformational epitopes for all three allergens. The specific antibody response towards denatured BLG was statistically significantly lower than towards native BLG. The BLG results showed that about 15 times more antibodies were raised against conformational epitopes compared to linear epitopes and that this was independent of the administration route. In contrast, the specific antibody response towards denatured β -casein was shown not to be statistically different from that of the native protein, again independent of the administration route. Here only around half of the

antibodies seemed to be raised against conformational epitopes. Whereas both BLG and β -casein showed no differences between administration routes, ALA showed a statistically significant difference between the denatured and native allergen state, only with the use of i.p. administration. Here more than 50 times more antibodies had been raised against conformational epitopes compared to linear epitopes. In contrast, this number was only 4 times when dosing via the oral route. Moreover, the study showed that use of adjuvant strongly influenced the importance of conformational epitopes, as Al(OH)₃ increased the reactivity towards linear epitopes.

Conclusion

Collectively the study shows that the role of conformational epitopes greatly depends on the individual allergen, the use of adjuvant, and may for some be affected by their structural stability.

Authors' details

¹Technical University of Denmark, National Food Institute, Søborg, Denmark.

²Technical University of Denmark, Department of Systems Biology, Kgs. Lyngby, Denmark.

Published: 17 March 2014

doi:10.1186/2045-7022-4-S2-P23

Cite this article as: Bogh et al.: Linear versus conformational epitopes of three cow's milk allergens. *Clinical and Translational Allergy* 2014 4(Suppl 2):P23.

¹Technical University of Denmark, National Food Institute, Søborg, Denmark
Full list of author information is available at the end of the article