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Aluminium per se and in the anti-acid drug sucralfate promotes sensitization via the oral route.

Brunner R, Wallmann J, Szalai K, Karagiannis P, Altmeppen H, Riemer AB, Jensen-Jarolim E, Pali-Schöll I.

Department of Pathophysiology, Medical University of Vienna, Vienna, Austria.

Abstract

BACKGROUND: Aluminium (ALUM) is used as experimental and clinical adjuvant for parenteral vaccine formulation. It is also contained in anti-acid drugs like sucralfate (SUC). These anti-acids have been shown to cause sensitization to food proteins via elevation of the gastric pH. The aim of this study was to assess the oral adjuvant properties of ALUM, alone or contained in SUC, in a BALB/c mouse model.

METHODS: Mice were fed SUC plus ovalbumin (OVA) and compared with groups where ALUM or proton pump inhibitors (PPI) were applied as adjuvants. The humoral and cellular immune responses were assessed on antigen-specific antibody and cytokine levels. The in vivo relevance was investigated in skin tests.

RESULTS: The highest OVA-specific immunoglobulin G1 (IgG1) and IgE antibody levels were found in mice fed with OVA/SUC, followed by OVA/ALUM-treated animals, indicating a T helper 2 (Th2) shift in both groups. Antibody levels in other groups revealed lower (OVA/PPI-group) or baseline levels (control groups). Positive skin tests confirmed an allergic response in anti-acid or adjuvant-treated animals.

CONCLUSIONS: Our data show for the first time that ALUM acts as a Th2-adjuvant via the oral route. This suggests that orally applied SUC leads to an enhanced risk for food allergy, not only by inhibiting peptic digestion but also by acting as a Th2-adjuvant by its ALUM content.

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MeSH Terms, Substances

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