Background: Modulating early immune response by application of bacteria and their by-products has been suggested as a preventive strategy against the development of allergic diseases. In light of this, the aim of the study was to test the effects of oral administration of bacterial lysates (BL) in a rat model of food allergy. Methods: BL or PBS were administered orally to neonatal Brown Norway rats up to an age of 42 days. Additionally, animals were sensitized 3 times (days 35, 40 and 45) intraperitoneally with ovalbumin (OVA). On days 60 and 61, rats were locally challenged with OVA by gavage feeding. Results: Detection of increased allergen-specific Ig serum levels and proliferative responses of spleen mononuclear cells confirmed systemic sensitization. In serum of animals that received BL in addition to OVA sensitization, the levels of allergen-specific IgE and IgG were significantly reduced compared to animals which were not exposed to BL. Allergen-stimulated lymphocytes from spleen and mesenteric lymph nodes of BL-treated animals showed a significantly elevated cytokine production of IL-10. To assess local functional changes of the intestinal barrier we measured the intestinal permeability, which was increased in OVA-sensitized and challenged animals compared to nonsensitized controls, yet significantly reduced in sensitized animals which received BL. Conclusion: These data suggest that local administration of BL (pathogen-associated molecular patterns) in the intestine exhibits
immuno-modulating effects. Furthermore, pathophysiological features of food allergy, such as the loss of gut mucosal integrity, might be reduced by the treatment with BL.

Stichworte: Food allergy; Bacterial lysates; Immune modulation; Primary prevention; Innate immunity

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