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Induction of a food allergy model in Brown Norway rats

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Food allergy has become an increasing disorder from the immune system in the Westernized world that can involve great impact on health or even can be lethal. Achieving an animal model of this pathology could help the research of preventive and curative treatments and also provide deeper information about the pathophysiology of the process. The aim of this study was to obtain a suitable model of food allergy in rats by testing three different ways of oral sensitization.

Brown Norway rats (IgE-response prone) were treated with either: a) daily oral gavage with ovoalbumin (OVA, 1 mg/rat/day) for 6 weeks[1]; b) oral gavage of OVA (30 or 100 mg/rat) together with choleric toxin (50 ng) twice a week for 3 weeks[2]; c) sensitization by an intraperitoneal injection of OVA (0.1 mg/rat) plus Alum and *Bordetella pertussis* toxin[3] (50 ng/rat) and, 14 days later, daily oral gavage of OVA (1 mg/rat/day) for 3 weeks.

Serum anti-OVA antibodies belonging to IgE, IgG1 and IgG2a (Th2-related antibodies) and IgG2b (Th1-related antibody) were quantified by ELISA. Behaviour of animals after oral OVA challenge was established at the end of the study. Similarly, response of intestinal immune system was quantified by anti-OVA IgA (ELISA or ELISPOT) and determination of lymphocyte phenotype in Peyer's patches and mesenteric lymph nodes. Results showed that, although there was a systemic and intestinal immune response to OVA, the only protocol able to induce anti-OVA IgE and an anaphylactic shock when OVA was orally given was that using *B. pertussis* toxin.

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