

Differences and Similarities of Immune Responses Underlying Allergy Improvements Following Supplementation of Local Indonesian Probiotic Strain *Lactobacillus Plantarum* IS-10506 (LIS) Between Allergic Children and Allergic Modeled Balb/C Mice

CRS Prakoeswa^{1*}, N Herwanto¹, R Prameswari¹, L Astari¹, Sawitri¹, AN Hidayati¹, DM Indramaya¹, E Retnowati², A Endaryanto³ and IS Surono⁴

¹Dermatology and Venereology Department, Faculty of Medicine, UniversitasAirlangga, Dr. Soetomo Teaching Hospital, Indonesia

²Clinical Pathology Department, Faculty of Medicine, UniversitasAirlangga, Dr. Soetomo Teaching Hospital, Indonesia

³Pediatric Department, Faculty of Medicine, UniversitasAirlangga, Dr. Soetomo Teaching Hospital, Indonesia

⁴Food Technology Department, Faculty of Engineering, Bina Nusantara University, Indonesia

Previous research showed potential role of probiotics for allergy, but the mechanism is still unclear. This study aimed to determine the differences and similarities of immune responses for suppressing allergy after supplementation of *Lactobacillus plantarum* IS-10506 of dadih origin, between allergic children and allergic modeled Balb/c mice. The study was conducted in 2 steps with two types of subjects, Balb/c-mice sensitized by ovalbumin and children with IgE mediated atopic dermatitis. Randomized clinical trials were conducted, in 4 weeks probiotic administration. The adaptive immune response (IFN- γ , IL-4 (Th2), and IL-10 (T reg), total IgE); and the allergic reaction were assessed. Both studies showed decreasing allergic reaction and increasing of IL-10 level. IgE level increased in animal model but showed no significant changes in human subjects and increased IL-4 and IFN- γ in animal models but decreased in human subjects. These finding showed that *Lactobacillus plantarum* IS-10506 supplementation in animal model and human subjects were giving different immune responses, but both showed improvement in allergic reaction and increased T reg function which is represented by IL-10 levels. *Lactobacillus plantarum* IS-10506 offers a potential treatment for allergic diseases. Further long-term studies are required to confirm the therapeutic efficacy of LIS in allergic reaction.

Keywords: *Lactobacillus plantarum* IS-10506, immunoregulation, allergy, Balb/c mice, children.

Biography:

Dr. Cita Rosita SigitPrakoeswa has 15 years of working experience in Department of Dermatology and Venereology, Faculty of Medicine, UniversitasAirlangga - Dr Soetomo Teaching Hospital. Since 2016, Dr. Prakoeswa heads the Research and Development Board of Dr. Soetomo Teaching Hospital and since 2009 as an Expert Panel in the Ministry of Health (Risbiniptekdok), Indonesia. She was awarded with four international awards (two best presenter awards and two scholarship awards) and also High Achievement Lecturer at UniversitasAirlangga. Dissemination of various results of her researches carried out through books, journals, and presentation in scientific meetings.