

DOI: 10.5152/TurkThoracJ.2019.33

**[Abstract:0066] MS-042 [Accepted: Oral Presentation] [Asthma Allergy]**

## The Effect of Probiotic Usage on the Systemic Inflammation and Oxidative Stress in Experimental Asthma Model

Nuray Seyitoğlu<sup>1</sup>, Şule Taş Gülen<sup>1</sup>, Nesibe Kahraman Çetin<sup>2</sup>, Eyüp Murat Yılmaaz<sup>3</sup>, Çiğdem Yenisey<sup>4</sup><sup>1</sup>Department of Chest Diseases, Adnan Menderes University School of Medicine, Aydın, Turkey<sup>2</sup>Department of Pathology, Adnan Menderes University School of Medicine, Aydın, Turkey<sup>3</sup>Department of General Surgery, Adnan Menderes University School of Medicine, Aydın, Turkey<sup>4</sup>Department of Biochemistry, Adnan Menderes University School of Medicine, Aydın, Turkey

**Objectives:** The aim of asthma treatment is to prevent chronic airway inflammation. The most effective anti-inflammatory drugs are inhaled corticosteroids. However, they cause many side effects when used for a long time. Probiotics have anti-inflammatory effects such as corticosteroids, as well as antimicrobial and immunomodulating properties. The aim of this study was to investigate both the efficacy of probiotics in asthma management; and the relationship between systemic inflammation, oxidative stress and probiotics.

**Methods:** A total of 40 female Wistar Albino rats weighing 300-320 g were used in our study. The rats were divided into 4 groups (10 in each group). Group 1; any drug or treatment is not applied, group 2; asthma model created and not given any treatment, group 3; asthma model created and given probiotic. Group 3 was given  $1 \times 10^9$  CFU/0.35 ml Lactobacillus rhamnosus daily from the first day of the study through gavage. Group 4 asthma model created and given corticosteroid treatment. For this group, after the 14th day of the study, 1000 micrograms of budesonide was given in the form of a single dose over the day by inhaler. 28 days of study was ended with sacrificing all rats by appropriate anesthesia. Also, histopathological examination of the lung tissues from all rats was performed. Eosinophil and mast cell count were recorded. IL-13, IL-5, IgE, 8-OHdG levels of both tissue and serum samples were examined biochemically.

**Results:** Our study was completed with 40 rats. Probiotics caused a significant histopathologically decrease especially in eosinophil count for rats with asthma ( $p < 0.001$ ). In the probiotic group serum IL-13 levels were significantly higher than untreated asthma group ( $p = 0.002$ ), serum levels of IL-5, IL-13, IgE and 8-OHdG were low, but not significant. When inflammation markers in lung tissue are examined, in the probiotic group, tissue IgE level was lower than the asthma group, but the others were similar.

**Conclusion:** Probiotics, similar to the effects of steroids on inflammation, which are the main treatment of asthma, leads to a decrease in eosinophil and IL-13 levels. Thus, human studies are needed to be used in the prevention and treatment of asthma.

**Keywords:** Asthma, probiotics, systemic inflammation, oxidative stress