Abstract: Background and objectives: Breast Cancer (BC) is a common invasive cancer of women. The cancer chemotherapy is one of major cancer therapies widely. The chemotherapy agents have many side effects reversely or irreversely. The decrease of chemotherapy agent in parallel with increase immunity against tumor is one of key research item. Probiotics that are live nonpathogenic bacteria or its components can improve host immunity for prevention and treatment of cancer. This study was evaluated the Lactobacillus rhamnosus GG on chemotherapy dose of cisplatin in BC animal model.

Material and Methods: Spontaneous cancer induction model of female homozygous inbred Balb/C mice (2-3 weeks) was used. Briefly, a tumor tissue from spontaneous tumorized Balb/C mice extracted and chopped to small pieces under sterile condition. The tumor pieces were transplanted in right flanks of mice and take a 7 days recovery period. After cancer verification in mice, the animals were divided to tumor as control, probiotic, cisplatin and probiotic-cisplatin group (n=5 in each group). The probiotic bacteria (3*108CFU/day) was administered one week before tumorization by gastric intubation continued additional 27 days with 3 days interval and 7 days postoperative delay. The cisplatin (i.p)) was used as chemotherapy agent (5 mg/kg, 2 twice in a week). Control group were received PBS as the same protocol and schedule. The data were analyzed by ANOVA and Tukey post hoc test.

Results: The data showed that probiotic Lactobacillus rhamnosus GG decreased the amount of cisplatin usage, decreased side effects of cisplatin such as, hepatotoxicity, nephrotoxicity and also it decreased the size of tumor in cisplatin-probiotic group compared with cisplatin group significantly. The Delayed type hypersensitivity was returned to probiotic level and MTT test showed that it rose up to control level. The mitotic tumor cells decreased and necrotic tumor cells increased significantly.

Conclusion: The data showed that probiotic Lactobacillus rhamnosus GG can enhanced the immunity of host against cancer and can lower the use of anticancer chemotherapy agent.