



K. Neanidis<sup>1</sup>, P. Panagiotidis<sup>1</sup>, M. Karavanis<sup>1</sup>, S. Tsetsakos<sup>1</sup>, A.Z. Kouroutzidou<sup>1</sup>, E. Sofianidou<sup>1</sup>, C. Vadikolia<sup>2</sup>, D.E. Kiousi<sup>3</sup>, A. Pappa<sup>3</sup>, A. Galanis<sup>3</sup>, E. Tataridou<sup>4</sup>, K. Amarantidis<sup>5</sup>, E. Biziota<sup>5</sup>, T. Koukaki<sup>5</sup>, V. Tsitouras<sup>5</sup>, I. Balgkouranidou<sup>5</sup>, D. Matthaios<sup>5</sup>

1. Oncology Department, 424 General Military Training Hospital, Thessaloniki, Thessaloniki, Greece 2. Hematology Department of Molecular Biology and Genetics, Faculty of Health Sciences, Democritus University of Thrace, Alexandroupolis, Greece 4. Radiation Oncology Unit, Theageneio Anticancer Hospital, Thessaloniki, Greece 5. Department of Medical Oncology, University General Hospital of Alexandroupolis, Democritus University of Thrace, Greece

Recent studies have correlated the administration of probiotics with solid tumors. To our Knowledge, this is the first randomized clinical prospective study conducted in patients with solid tumors receiving immunotherapy, aiming to investigate the possible immunomodulatory role of a commercial probiotic formulation. The study is being conducted at the Oncology Clinic of the 424 Military Hospital, in collaboration with the Oncology Department of Democritus University of Thrace Medical School and the Department of Molecular Biology and Genetics, Democritus University of Thrace. We investigated whether the addition of a probiotic formula versus placebo will augment the efficacy of immunotherapy in patients with solid tumors

## MATERIALS AND METHODS

This is a randomized double blind prospective study. Since the start of the trial (December 2021), 15 patients have completed the study: 8 were given the probiotic formula and 7 placebo. Peripheral blood was collected from patients before and after three treatment cycles (every 42 days) and total lymphocytes, CD3+CD4+, and CD3+CD8+ T lymphocytes, B cells (CD19+), natural killer cells (CD16-CD56+), PDL-1+ cells, and the more specialized regulatory T cells (CD4+CD25+CD127-), were detected by flow cytometry.PDL1, TIGIT,IL-6 and II-8 levels were measured with ELISA. During the study, the clinical course of the patients, response to treatment along with serial evaluations of quality of life monitoring were documented. The trial is still ongoing recruiting patients



Schematic representation of experimental workflow

# A RANDOMIZED PROSPECTIVE STUDY TO ASSESS THE IMMUNOMODULATORY EFFECT OF A PROBIOTIC SUPPLEMENT IN PATIENTS WITH SOLID TUMORS UNDER IMMUNOTHERAPY

### INTRODUCTION













#### **Expression of PDL-1 and T-regulators in** Expression of PDL-1 and T-regulators in **Placebo Group Probiotic Group** 20,8 PDL-1

**Figure 5.** The values between PDL-1 and T-regulators are inversely proportional. Especially in probiotic group the values of PDL-1 drop significantly lower than in placebo group with a simultaneous greater increase in the population of T-regs

RESULTS

-regulators (%) in Lymphocytes			
ay	Probiotic Group	Placebo Group	
)	0,37	0,30	
2	0,67	0,49	
4	0,70	0,47	
68	0,65	0,53	

-regulators (%) and Lymphocytes (%)			
Dav	Probiotic Group		
Duy	T-regs (%)	Lymphs (%)	
0	0,37	19,79	
42	0,67	19,23	
84	0,70	23,21	
168	0,65	20,83	
Day	Placebo Group		
	T-regs (%)	Lymphs (%)	
0	0,30	19,46	
42	0,49	21,92	
84	0,47	25,83	
168	0.53	24.51	

Our first interim analysis showed that there is a statistical significant correlation of PDL-1 levels with the probiotic arm. In particular, in the arm of patients receiving the probiotic formula, a statistical significant decrease in PDL-1 levels was observed. Regarding IL-6, and TIGIT levels, our first interim analysis indicates a significant trend towards greater reduction of TIGIT and IL-6 levels in patients receiving the probiotic formula. In conclusion, our first analysis indicates a positive effect of probiotics in our study population. Larger number of patients are needed to

#### confirm our preliminary results

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## CONCLUSIONS

#### REFERENCES