

## INTRODUCTION

Not all cancer patients respond to immunotherapy, and the variation in response may be attributed to the individual's microbiome, which is profoundly influenced by dietary habits. Understanding and manipulating the microbiome through dietary interventions offer a potential avenue for enhancing immunotherapy outcomes in cancer patients and consequently may serve as a complementary therapeutic strategy.

Diet plays a vital role in shaping the composition of the microbiome.

A diet rich in fiber, fruits, vegetables, and whole grains has been associated with a more diverse and beneficial microbiome, which in turn promotes the production of SCFA.

Specific microbiome metabolites such as short-chain fatty acids (SCFA) may enhance the effectiveness of immunotherapy.

Normalizing serum vitamin D levels is shown to be important to achieve the maximum effectiveness of immunotherapy.

# Personalized dietary intervention based on Mediterranean diet as a complementary strategy to modify gut microbiome, quality of life and outcomes in patients with metastatic melanoma treated with immunotherapy: a study protocol.

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## METHODS

We performed a systematic review according to Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. A total of 2130 citations were identified through searching PubMed/Medline using the following search strategy: ((food) OR (diet\*) OR (nutri\*)) AND (immunother\*) AND ((butyrate) OR (SCFA) OR (microbio\*)) AND (cancer). Animal studies, studies with participants younger than 18, review articles, case reports, book chapters and publications before 2015 were not within our scope. Since any relevant investigational studies were not identified, we proceeded with exploring diet-microbiome-immunotherapy axis through hand-searching and analyzing the secondary/indirect evidence.

### Dietary parameters

<b>Flavonoids</b>	> 9 mg /day
<b>Anthocyanins</b>	> 260 mg /day
<b>Proteins %</b>	> 100 % < 150 % recommended daily intake g/kg BM
<b>Omega 3</b>	>250 mg /day
<b>SFAs</b>	as low as possible (e.g. < 12% of EI (energy intake))
<b>Fruits and Vegetables</b>	at least 5 servings/day
<b>Foods with added sugar</b>	< 20g daily or as low as possible
<b>Fibers</b>	> 20 g daily
<b>Salt (Sodium)</b>	No restrictions



## OBJECTIVE - CONSTRUCTING A PROTOCOL

Bearing in mind the importance of gut microbiome as a co-denominator for immunotherapy response, we were aiming towards constructing a protocol on dietary intervention for enhancing immunotherapy response in metastatic melanoma patients

Nutritional intervention could be a crucial component of cancer treatment!

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