

62

A Mediterranean dietary pattern determines specific traits in the gut microbiota and associated metabolome

Francesca De Filippis¹, Nicoletta Pellegrini², Lucia Vannini³, Ian B. Jeffery⁴, Antonietta La Storia¹, Luca Laghi³, Diana I. Serrazanetti³, Raffaella Di Cagno⁵, Ilario Ferrocino⁶, Camilla Lazzi², Silvia Turrone³, Luca Cocolin⁶, Patrizia Brigidi³, Erasmo Neviani², Marco Gobetti⁵, Paul O'Toole⁴, Danilo Ercolini¹

¹University of Naples Federico II, Italy

²University of Parma, Italy

³Alma Mater Studiorum University of Bologna, Italy

⁴University College of Cork, Ireland

⁵University of Bari Aldo Moro, Italy

⁶University of Turin, Italy

Presenter: Francesca De Filippis, Danilo Ercolini

The typical Western diet corresponds to that of an omnivore (O); however, vegan (V) and vegetarian (VG) dietary patterns are becoming progressively popular. Mediterranean diet (MD), common in the Western Mediterranean culture, can be considered an omnivore diet characterized by a high consumption of fruit, vegetables and legumes. In this study, we investigated the potential impact of habitual VG and V diets on the gut microbiota and metabolome in a cohort of 153 Italian individuals. We collected daily dietary information and found that the majority of V and VG, as well as 30% of O, had a high adherence to the MD. Moreover, a stratification of microbiota according to diet type and adherence to the MD was found. The vegetable-based diets were associated with increased levels of fecal short-chain fatty acids, *Prevotella* and some fibre-degrading Firmicutes such as *Lachnospira* and *Roseburia*. On the contrary, *Ruminococcus* species belonging to *Lachnospiraceae* and *Streptococcus* were linked to O diet. The microbiota associated to the intake of fat and animal products was also linked to urinary trimethylamine oxide (TMAO) levels that were higher in omnivores as well as in individuals with lower adherence to the MD. These results suggest that Western omnivore diets are not necessarily detrimental when a certain consumption of plant foodstuffs is included like in the MD, which is associated with beneficial microbiome-related metabolomic profiles.