

Table 1. Dietary Consumption Pattern in Relationship to Intestinal Bacterial Composition:

Diet Pattern / Dietary Component	Impact on Cognitive Function	Bacterial Composition (↑ increased; ↓ decreased)	References
Western Diet	Associated with cognitive impairment	• Actinobacteria phylum: ↓ <i>Bifidobacterium</i> • Bacteroidetes phylum: ↑ <i>Bacteroides</i> • Firmicute phylum: ↓ <i>Eubacterium</i> ▪ ↑ Proteobacteria phylum: • ↑ Firmicutes:Bacteroidetes ratio	• Drasar, B. S. <i>et al.</i> (1973) • Wu, G. D. <i>et al.</i> (2011) • Shankar, V. <i>et al.</i> (2017) • García-Montero, C. <i>et al.</i> (2021)
Mediterranean Diet	Associated with improved cognitive function	▪ Actinobacteria phylum: ↑ <i>Bifidobacterium</i> ▪ Bacteroidetes phylum: ↓ <i>Prevotella</i> ▪ Firmicutes phylum: ↑ <i>Roseburia</i> ↑ <i>Lactobacillus</i> ↑ <i>Faecalibacterium prausnitzii</i> ↓ <i>Clostridium</i>	• Bialonska, D. <i>et al.</i> (2010) • Furet, J. P. <i>et al.</i> (2010) • Queipo-Ortuño, M. I. <i>et al.</i> (2012) • Bifulco, M. (2015) • Meslier, V. <i>et al.</i> (2020) • García-Montero, C. <i>et al.</i> (2021) • Wang, D. D. <i>et al.</i> (2021)
Ketogenic Diet	Associated with some improvement of cognitive function	▪ ↓ Firmicutes ↓ <i>Eubacterium rectale</i> ↓ <i>Dialister</i> ↓ <i>Roseburia</i> ↓ <i>Faecalibacterium prausnitzii</i> ↓ <i>Eubacterium rectale</i> ▪ Actinobacteria phylum: ↓ <i>Bifidobacteria</i> ▪ ↑ Bacteroidetes phylum: ↓ <i>Bacteroides</i> ▪ Proteobacteria phylum: ↑ <i>Escherichia Coli</i> ↑ <i>Desulfovibrio</i>	• Paoli, A. <i>et al.</i> (2019). • Lindefeldt, M. <i>et al.</i> (2019). • Swidsinski, A. <i>et al.</i> (2017). • Tagliabue, A. <i>et al.</i> (2017). • Zhang, Y. <i>et al.</i> (2018). • Russell, W. R. <i>et al.</i> (2011).
Fat: Saturated- and Trans-fat	Associated with cognitive impairment	▪ ↑ Actinobacteria phylum ▪ Bacteroidetes phylum: ↑ <i>Bacteroides</i> ▪ ↓ Firmicutes phylum: ↓ <i>Lactobacillus intestinalis</i> ↑ <i>Clostridiales</i> ▪ Proteobacteria phylum: ↑ <i>Enterobacteriales</i> ↑ <i>Bilophila</i>	• Wu, G. D. <i>et al.</i> (2011) • Fava, F. <i>et al.</i> (2013) • Lecomte, V. <i>et al.</i> (2015) • Caesar, R., <i>et al.</i> (2015)
Fat: Mono- and Poly-unsaturated	Associated with improved cognitive function	▪ Actinobacteria phylum: ↑ <i>Bifidobacterium</i> ↑ <i>Adlercreutzia</i> ▪ Bacteroidetes phylum: ↑ <i>Parabacteroides</i> ↓ <i>Prevotella</i> ▪ Firmicutes phylum: ↑ <i>Roseburia</i> ↑ <i>Oscillospira</i> ↑ <i>Lachnospiraceae</i> ↑ <i>Lactobacillus</i> ↑ <i>Streptococcus</i> ▪ Verrucomicrobia phylum: ↑ <i>Akkermansia muciniphila</i>	• Caesar, R., <i>et al.</i> (2015) • Wolters, M. <i>et al.</i> (2019) • Millman, J. F. <i>et al.</i> (2021) • O'Connor, K. <i>et al.</i> (2019) • Brahe, L. K. <i>et al.</i> (2015) • Watson, H. <i>et al.</i> (2018) • Balfegó, M. <i>et al.</i> (2016) • Andersen, A. D., <i>et al.</i> (2011)

Carbohydrates: Refined	Associated with cognitive impairment	▪ ↑ Proteobacteria phylum ▪ ↓ Bacteroidetes phylum ▪ Verrucomicrobia phylum: ↓ <i>Akkermansia muciniphila</i>	• Antonini, M. <i>et al.</i> (2019) • Satokari, R. (2020) • Do, M. H. <i>et al.</i> (2018) • Shang, W. <i>et al.</i> (2017)
Carbohydrates: Fiber	Associated with improved cognitive function	▪ Actinobacteria phylum: ↑ <i>Bifidobacterium</i> ▪ ↑ Bacteroidetes phylum: ↑ <i>Prevotella</i> ▪ Firmicutes phylum: ↑ <i>Lactobacillus</i> ↑ <i>Ruminococcus</i> ↑ <i>Roseburia</i> ↑ <i>Eubacterium rectale</i>	• Halmos, E. P. <i>et al.</i> (2015) • Reddy, B. S. <i>et al.</i> (1975) • Walker, A. W. <i>et al.</i> (2011) • Costabile, A. <i>et al.</i> (2008) • Carvalho-Wells, A. L. <i>et al.</i> (2010) • Keim, N. L. <i>et al.</i> (2014) • Leitch, E. C. M. W. <i>et al.</i> (2007) • de Wit, N. <i>et al.</i> (2012). • Hildebrandt, M. A. <i>et al.</i> (2009) • De Filippo, C. <i>et al.</i> (2010) • Lopez-Legarrea, P. <i>et al.</i> (2014)
Protein: Animal-Based	Associated with cognitive impairment	▪ Actinobacteria phylum: ↓ <i>Bifidobacterium adolescentis</i> ▪ Bacteroidetes phylum: ↑ <i>Bacteroides</i> ↑ <i>Alistipes</i> ▪ Firmicutes phylum: ↑ <i>Clostridia</i> ▪ Proteobacteria phylum ↑ <i>Bilophila</i>	• David, L. A. <i>et al.</i> (2014) • Cotillard, A. <i>et al.</i> (2013) • Hentges, D. J. <i>et al.</i> (1977) • Russell, W. R. <i>et al.</i> (2011) • De Filippo, C. <i>et al.</i> (2010) • Reddy, B. S. <i>et al.</i> (1975)
Protein: Plant-Based	Associated with improved cognitive function	▪ Actinobacteria phylum: ↑ <i>Bifidobacterium</i> ▪ Firmicutes phylum: ↑ <i>Lactobacillus</i> ↓ <i>Clostridium perfringens</i> ▪ Bacteroidetes phylum: ↓ <i>Bacteroides fragilis</i>	• Reddy, B. S. <i>et al.</i> (1975) • Dominika, Ś. <i>et al.</i> (2011) • Romond, M. B. <i>et al.</i> (1998)
Polyphenols	Associated with improved cognitive function	▪ Actinobacteria phylum: ↑ <i>Bifidobacterium</i> ▪ Firmicutes phylum: ↑ <i>Lactobacillus</i> ↓ <i>Staphylococcus aureus</i> ↓ <i>Clostridium</i> ▪ Proteobacteria phylum: ↓ <i>Salmonella typhimurium</i>	• Queipo-Ortuño, M. I. <i>et al.</i> (2012) • Bialonska, D. <i>et al.</i> (2010) • Druart, C. <i>et al.</i> (2014) • Tzounis, X. <i>et al.</i> (2008) • Eid, N. <i>et al.</i> (2014) • Cuervo, A. <i>et al.</i> (2014) • Vendrame, S. <i>et al.</i> (2011) • Jin, J. S., Touyama, M. <i>et al.</i> (2012) • Tzounis, X. <i>et al.</i> (2011) • Cueva, C. <i>et al.</i> (2013) • Parkar, S. G. <i>et al.</i> (2008) • Lee, H. C. <i>et al.</i> (2006)
Alcohol: Red wine	Associated with improved cognitive function	▪ Bacteroidetes phylum: ↑ <i>Bacteroides</i>	• Queipo-Ortuño, M. I. <i>et al.</i> (2012) • Nash, V. <i>et al.</i> (2018)
Alcohol: Binge Drinking	Associated with cognitive impairment	▪ ↑ Bacteroidetes phylum ▪ ↓ Firmicutes phylum: ↑ <i>Enterococci</i> ↑ <i>Clostridium</i> ↑ <i>Holdemania</i> ↓ <i>Faecalibacterium</i> ▪ ↑ Proteobacteria phylum: ↑ <i>E. Coli</i> ↑ <i>Klebsiella</i> ↑ <i>Pasteurella</i> ↑ <i>Proteus</i> ↑ <i>Pseudomonas</i>	• Yan, A. W. <i>et al.</i> (2012) • Mutlu, E. A. <i>et al.</i> (2012) • Bjørkhaug, S. T. <i>et al.</i> (2019)

		↑ <i>Shigella</i> • ↑ <i>Sutterella</i> ▪ ↑ Verrucomicrobia phylum	
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