

In the present review, Xingfu Zou et.al., have described the link between the gut microbiome and Alzheimer's disease. They not only discussed the "dysbiotic" microbiome in AD patients but also explored the role of gut-microbial metabolites, the effect of traditional medicines and treatments on the gut microbiome of AD subjects. Additionally, they included a few animal studies to provide information on the potential mechanisms underlying the interaction between gut microbiota, treatment, and AD. However, the authors need to mention more mechanistic studies (mentioned below).

Furthermore, the authors extended their description to microbiome-mediated treatment options, such as probiotics, prebiotics, synbiotics, and, most importantly, fecal microbiota transplant (FMT). FMT has been used to treat recurrent *C. difficile* infection, and preliminary data suggest its potential as a therapy for other conditions, including but not limited to inflammatory bowel disease, obesity, and functional gastrointestinal disorders, etc. In the current review, the authors have done a commendable job by dedicating a separate section to FMT for AD. However, they need to provide a more detailed description. These and a few more comments are as follows:

1. Authors may consider citing additional studies for lines 122-125 and from lines 125 to 129.
2. Throughout the manuscript, authors can omit mentioning microbiome changes at the phyla level wherever possible. Also, try to combine results and generalize knowledge from different studies instead of listing each study separately. For example, combining differences in the relative abundance of DNA reads belonging to beneficial/pathogenic bacteria from different studies.
3. Italicize the names of bacteria throughout the manuscript, especially at line 152 and 156.
4. It would be helpful for the reader if authors create concise tables for each section. For example, creating a table for Section 2.1 to summarize the microbiome composition of AD subjects. (A single table would suffice to summarize both Section 2.1 and 2.2.)
5. Authors may consider rephrasing the title for Section 2.2. "Pathogenic factors" does not seem to be an appropriate term.
6. In Section 5.2, authors need to include more herbal or traditional medicines if available. A table summarizing findings would be useful.
7. This review could benefit if authors include a section on reports and mechanistic studies performed using animal models (mice, *C. elegans*, etc.). Here are a few examples:

- a. <https://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1009510>
- b. <https://www.nature.com/articles/s42003-021-02218-7>
- c. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7273394/>
- d. <https://www.nature.com/articles/s41422-019-0216-x>
- e. <https://journals.asm.org/doi/10.1128/spectrum.03458-22>
- f. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273036>