Abstract

Current and emerging indications of FMT: Can it really be a standardized treatment ?

Fecal microbiota transplantation is an effective treatment in recurrent Clostridioides difficile infection and it is widely, safely and successfully used in this indication. As the gut microbiota is involved in the pathogenesis of many diseases and in response to treatments, it has been evaluated in many clinical settings with several encouraging results. However, contrary to its almost perfect efficacy in Clostridioides difficile infection, FMT effect is more variable in other potential indications. This led to the emergence of several questions, including the possibility of a "donor effect" or a "recipient effect", and of matching between donor and recipient. More generally, the available data suggest that all stools are not equal and that some specific components (microorganisms and/or metabolites) might be responsible for the therapeutic effects. This is indeed not surprising when you investigate the composition of human stools. Besides an immense diversity of bacteria, there are many other types of microorganisms (fungi, archae, virus, protists) and a wide range of metabolites and even human cells. So, from a medical and scientific point of view, given the vast and largely unknown diversity and interindividual variability of human feces, it seems impossible to standardize human feces-based preparations. Currently, FMT material is selected only based on safety parameters (notably by screening the donors for potentially harmful microorganisms). It is not currently conceivable to fully characterize human fecal samples, but it is feasible to select specific donors based on the amount of specific components (microorganisms, richness or metabolite). However, this strategy cannot be used as a standardization procedure as all the other components are not controlled. To move from FMT to a standardized treatment, the only way seems to build the drug from defined and controlled components.