

EFFECT OF ORAL PREBIOTIC CONSUMPTION ON THE GASTROINTESTINAL MICROBIOTA AND IMMUNE MARKERS IN HUMAN IMMUNODEFICIENCY VIRUS (HIV) AND SIMIAN IMMUNODEFICIENCY VIRUS (SIV) INFECTION: A SYSTEMATIC REVIEW.

Authors:

Mortimer EK¹, Young GP¹, Rogers GB^{1,2}, Ward PR¹

¹ Flinders University of South Australia, College of Medicine and Public Health

² South Australian Health and Medical Research Institute (SAHMRI)

Background:

Owing to the localization of lentivirus activity in the gastrointestinal system, oral pre- and syn-biotics have been identified for application in HIV. Potential benefits are based on observed beneficial effects on gut epithelial integrity, bacterial translocation and luminal dysbiosis.

The aim of this review was to determine the effect of prebiotics on the gastrointestinal microbiota and immune markers in any lentivirus model.

Methods:

Primary research papers were included if they reported diversity of gastrointestinal bacteria after dietary interventions containing prebiotics. Medline, Scopus and Web of Science were searched according to key words and the JBI Critical Appraisal Checklist was applied. This review provides a qualitative synthesis of eight papers identified after application of inclusion/exclusion criteria.

Results:

Seven articles measured bacteria in stool whilst one measured bacteria in saliva. One considered a SIV-model, the remaining seven utilised an HIV-model. Of the human studies, mean participant age ranged from 26-48 years. Three studies included only ART-naïve participants. Mean duration of ART in the remaining studies was 6.1-8.9 years. Prebiotic interventions ranged from 4-48 weeks and most utilised a sole or combined oligosaccharide intervention, such as fructo-/galacto-oligosaccharides. Dosage ranged from 10-30 grams/day, whilst the SIV study utilised 200 mg/day.

Two papers reported an increase in relative abundance of bacteria associated with clinical benefit, including Bifidobacteria, Firmicutes and Actinobacteria. One study reported a decrease in bacteria with pathogenic potential (Clostridia species and Eubacteria rectale).

Two studies reported significant reductions in T-cell activation (HLA-DR+CD38+ and CD25+). An increase in genes expressed by Antigen Presenting Cells was observed in the SIV study.

Conclusion:

Evidence exists for a beneficial effect of prebiotics on gut microbiota and immune markers. Studies demonstrated safety and tolerability. Effects may be influenced by ART status and prebiotic dosing parameters such as amount, duration and type. Further studies are warranted.

Disclosure of Interest Statement:

No pharmaceutical grants were received in the development of this study.