Author’s response to reviews

Title: Synbiotic therapy decreases microbial translocation and inflammation and improves immunological status in HIV-infected patients: a double-blind randomized controlled pilot trial

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Synbiotic therapy decreases microbial translocation and inflammation and improves immunological status in HIV-infected patients: a double-blind randomized controlled pilot trial

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Abstract:

**Background:** HIV-infection results in damage and dysfunction of the gastrointestinal system. HIV enteropathy includes pronounced CD4+ T-cell loss, increased intestinal permeability, and microbial translocation that promotes systemic immune activation, which is implicated in disease progression. A synbiotic is the combination of probiotics and prebiotics that could improve gut barrier function. Our study goal was to determine whether the use of a synbiotic, probiotics or a prebiotic can recover immunological parameters in HIV-infected subjects through of a reduction of microbial translocation and pro-inflammatory cytokine production. **Methods:** a randomized, double-blind controlled study was performed; twenty Antiretroviral treatment-naïve HIV-infected subjects were subgrouped and assigned to receive a synbiotic, probiotics, a prebiotic, or a placebo throughout 16 weeks. **Results:** We had no reports of serious adverse-events. From baseline to week 16, the synbiotic group showed a reduction in bacterial DNA concentrations in plasma ($p = 0.048$). Moreover, the probiotic and synbiotic groups demonstrated a decrease in total bacterial load in feces ($p = 0.05$). The probiotic group exhibited a significant increment of beneficial bacteria load (such as *Bifidobacterium*; $p = 0.05$) and a decrease in harmful bacteria load (such as *Clostridium*; $p = 0.063$). In the synbiotic group, the CD4+ T-cells count increased (median: +102 cells/$\mu$L; $p = 0.05$) and the level of Interleukin 6 cytokine decreased significantly ($p = 0.016$). **Conclusions:** Our study showed a significant increase in CD4+ T lymphocyte levels in the synbiotic group, which could delay the initiation of antiretroviral therapy and decrease costs in countries with limited resources.