

Title: THE EFFECTS OF BETAGLUCAN ON THE GUT MICROBIOME

Authors Vargas, F.X.M. ¹, Barreto, G.F. ¹, Lima, Y.S. ¹, Jerônimo, M.S. ¹, Tavares, A.H. ¹, Hoffmann, C. ^{1,2}, Bocca, A.L. ¹

Institution ¹ UnB – Universidade de Brasília (Campus Darcy Ribeiro – Asa Norte - Brasília), ² USP – Universidade de São Paulo (Av. Prof. Lineu Prestes, 580 Bloco 14. São Paulo – SP)

Abstract:

Beta-glucans are cell wall components present fungi which inhabit the mammalian gut. Previous studies demonstrated that it binds PRR receptors, such as Dectin-1, and triggers an immune response towards the fungus. It has been linked to immune activation of pro and anti-inflammatory responses in the host, but little has been done to elucidate the effect of this immune response in the gut microbiome. Here we investigate which role the immune response induced by fungal beta-glucans have on the murine gut microbiome. We use a murine model which lacks the Dectin-1 receptor in the intestinal epithelium to determine if effects on the microbiome. Purified betaglucan was delivered via gavage for 5 consecutive days to 7 KO mice and 7 WT control mice (paired control groups were also made using Phosphate Buffered Saline solution). Stool samples were collected prior the gavage, during the treatment, as well as after the treatment was discontinued. The rDNA 16S was sequences using the Illumina MiSeq plataforma to determine the microbiome profile of the fecal samples. Samples were extracted using the MoBio PowerSoil Kit, and the V1V2 rDNA region was sequenced. Data was processed using Qiime and analyzed using the R statistical computing environment. Preliminary data analysis indicates a strong inter-individual variability, which was not reduced by the treatment with beta-gluan (alpha diversity). Mild differential effects were detected regarding taxa abundances and distinct genotypes. The results indicate a small effect of the Dectin-1 on modulating the gut microbiome.

Keywords: Microbiome, Betaglucan, Dectine, 16S rDNA,, Sequencing

Funding agencies: CNPq/CAPES/CsF