Metabolite production of gum acacia in a gut model system

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Abstract

Gum acacia (GA) is a soluble dietary fibre derived from acacia trees. It is widely used in African countries and in the Middle East as a traditional medicine. The consumption of GA has been related to potential health benefits. The aim of this study was to examine the influence of GA on the metabolic activity of the human gut microbiota. We used a validated in vitro three-stage continuous culture system (gut model) system. The fermentation of GA led to an increase in Bifidobacterium spp. in vessel 2 and vessel 3, whereas FOS fermentation led to a significant increase in Bifidobacterium spp. in vessel 1 and decrease in Clostridium histolyticum in vessel 1. The fermentation of GA induced a significant increase in acetate in vessel 3 and propionate in vessel 2 in steady state 2 (SS2). We evaluated the fermentation of GA and FOS in a gut model system and the ability of the fermentation supernatants to modulate the activation and cytokine profile of PBMC subsets in vitro. FOS and GA led to an increase in IL-10 in vessel 1. In conclusion, GA leads to reduce gut inflammation in elderly by targeting specific bacterial group.

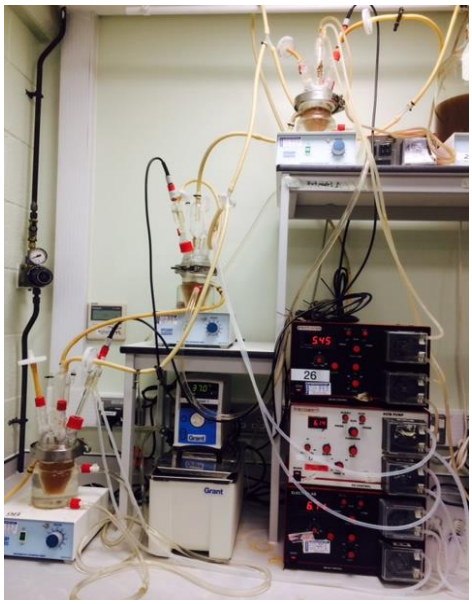


Figure 1: PH controlled, anaerobic, stirred gut model
pH 5.5, 6.2 and 6.8 at 37oC
• Faecal slurry (healthy elderly donor)
• Sampling at SS1 and SS2

Recent Publications.

1. Sehad Alarifi, Alan Bell & Gemma Walton (2018): In vitro fermentation of gum acacia – impact on the faecal microbiota, International Journal of Food Sciences and Nutrition, DOI: 10.1080/09637486.2017.1404970.
2. Randah M. Alqurashi, Sehad N. Alarifi, Gemma E. Walton, Adele Costabile, Ian R. Rowland, Daniel M. Commane, Evaluating the influence of Açai (Euterpeolerecea) consumption on colon health using a simulated model of the human Gastrointestinal tract. 2016, Journal of Food Chemistry.

Photograph



Biography (150 word limit)

Dr. Sehad is an assistant Professor in food microbiology and human nutrition. She specialize in conducting in vitro work in Nutrition and Food microbiology in her PhD. In Gum acacia as a functional food as a potential prebiotic activity and its beneficial effect on elderly population in vitro gut models. Now she is working more on Brain - gut axis and the possible health benefits of altering gut microbiota on behavior.

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