

## **A053 LPSC**

### **Encapsulation of CBD oil using natural polymers by freeze drying to modulate gut microbiota and enhance gut health**

#### **Abstract**

The non psychoactive benefits of Cannabidiol (CBD) oil have become a relevant topic in the food and pharmaceutical industry as of recent years. It serves many benefits including being an antidepressant, anxiolytic, antioxidant, analgesic, neuroprotective, and anti-inflammatory with many effects still yet to be discovered. In this current project, the effect of CBD oil on modulating gut microbiota will be investigated. The change in intestinal microbiota will consequently lead to enhanced gut health. In order to deliver the CBD oil to the target location at the lower intestinal tract where majority of microbes harbor, freeze drying of CBD contained microemulsions were applied using multiple natural polymers including yellow mustard mucilage, maltodextrine, and gum Arabic. We hypothesized that the encapsulation will help deliver the encapsulated CBD into the lower portion of the intestinal tract, modifying gut microbiota and improving overall gut health. The resultant materials are used for efficient bypassing of the upper digestive system to allow a higher bioavailability of CBD to be released in the targeted area. This study will evaluate emulsion stability, droplet size, flow behavior, and viscosity from the optimized emulsions that will be prepared before subjecting to freeze dryer. The encapsulation efficiency, releasing profile, morphological properties, particle size, and the in vitro modulating effect on gut microbes of our fabricated microparticles will also be assessed. Further, the application of the encapsulated CBD oil on gut microbiota and overall gut health will be investigated in-vivo.