CHAPTER 3

SCOPE OF INVESTIGATION

Based on the literature survey, in the present study entitled **'Role of Fructooligosaccharide, Buttermilk and Biogenic metabolites released from fermented beverage (Ambil) as a communicator between gut and brain'.** following working hypothesis has been framed:

1)Null Hypothesis

There is absence of biogenic metabolites **casoxin C and ß casomorphin** in prebiotic enriched cereal buttermilk based fermented beverage (ambil).

1)Alternate Hypothesis

There is presence of biogenic metabolites **casoxin C and ß casomorphin** in prebiotic enriched cereal buttermilk based fermented beverage (ambil).

2) Null Hypothesis

There is no association between consumption of prebiotic enriched cereal buttermilk based fermented beverage (ambil), fructooligosaccharide, buttermilk fresh and tetrapacked with improvement in gut microflora.

2)Alternate Hypothesis

There is association between consumption of prebiotic enriched cereal buttermilk based fermented beverage (ambil), fructooligosaccharide, buttermilk fresh and tetrapacked with improvement in gut microflora.

3) Null Hypothesis

There is no association between consumption of prebiotic enriched cereal buttermilk based fermented beverage (ambil), fructooligosaccharide, buttermilk fresh and tetrapacked with improvement in depression status.

3)Alternate Hypothesis

There is association between consumption of prebiotic enriched cereal buttermilk based fermented beverage (ambil), fructooligosaccharide, buttermilk fresh and tetrapacked with improvement in depression status.

4) Null Hypothesis

There is no association between consumption of prebiotic enriched cereal buttermilk based fermented beverage (ambil), fructooligosaccharide, buttermilk fresh and tetrapacked with improvement in serum cortisol.

4)Alternate Hypothesis

There is association between consumption of prebiotic enriched cereal buttermilk based fermented beverage (ambil), fructooligosaccharide, buttermilk fresh and tetrapacked with improvement in serum cortisol.

To substantiate the above-mentioned hypothesis present study was designed with the following objectives-

PHASE -I: *Quantification of Biogenic metabolites (B Casomorphin and Casoxin c) in ambil using High Performance Liquid Chromatography.*

PHASE -II: *Snap -Shoting the presence of mild to moderate depression among the subjects in the age group of 19-30 in the Faculty of Family and Community Sciences the Maharaja Sayajirao university of Baroda, Vadodara*

- Screening of the subjects from the Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda for mild to moderate depression using Beck's Depression Inventory.
- Collection of baseline data of subjects enrolled regarding their general information.
- Assessing the macro and micro nutrient intakes, and frequency of consumption of probiotic and prebiotic foods of normal, mild to moderate and severe depressed subjects.
- Mapping the morbidity profile, defecation pattern, personal habits as reported by normal, mild to moderate and severe depressed subjects.
- Assessing correlation among various parameters mentioned above with the fecal microbiota count and blood serum cortisol levels of mild to moderately depressed subjects.

PHASE -III: *Impact evaluation of intervention trials with ambil (prebiotic enriched fermented beverage) on the fecal microbial counts (Lactobacillus, Bifidobacteria and*

Enteric pathogens), depression status, serum cortisol and defecation profile of mild to moderately depressed subjects.

PHASE -IV: *Impact evaluation of intervention trials with fructooligosaccharide on the fecal microbial counts (Lactobacillus, Bifidobacteria and Enteric pathogens), depression status, serum cortisol and defecation profile of mild to moderately depressed subjects.*

PHASE -V*: Impact evaluation of intervention trials with fresh buttermilk on the fecal microbial counts (Lactobacillus, Bifidobacteria and Enteric pathogens), depression status, serum cortisol and defecation profile of mild to moderately depressed subjects.*

PHASE -VI: *Impact evaluation of intervention trials with tetrapacked buttermilk on the fecal microbial counts (Lactobacillus, Bifidobacteria and Enteric pathogens), depression status, serum cortisol and defecation profile of mild to moderately depressed subjects.*

PHASE -VII: *Evaluating which intervention had highest impact in reversing depression scores, cortisol levels and modulating gut microbiota composition.*

PHASE -VIII: *Developing an audio-visual animated film as Information Education Communication material to make general people aware about increasing trend of depression and how to cope up with it.*