

CHAPTER 3

SCOPE OF INVESTIGATION

Based on the literature survey, in the present study entitled “**Extraction of Xylooligosaccharides (XOS) from agricultural waste, determining its prebiotic properties and organoleptic qualities of Indian traditional foods upon its addition**”. Following null hypothesis has been formulated:

- The four agricultural wastes will not yield different amount of XOS.
- XOS will not show prebiotic properties in the in vitro trial.
- XOS added Indian traditional foods will not be accepted by the panellists for most of the organoleptic attributes.

To authenticate the above mentioned hypothesis present study was undertaken with the following objectives-

Phase I: Extraction of xylooligosaccharide from selected agricultural wastes.

(a) **Procurement and primary processing of agricultural waste.**

- 1) *Selection of agricultural wastes from the research station*
- 2) *Identification of the selected variety*

(b) **Preparation of the substrate for XOS extraction and HPLC analysis.**

Phase II: Determining the prebiotic properties of XOS in vitro.

- (a) Acid test
- (b) Bile test
- (c) Growth of Probiotic bacteria: *Lactobacillus plantarum*, *Bifidobacterium adolescentis* and *Escherichia coli*.
- (d) Production of Short chain fatty acids (SCFA): Acetate, butyrate and propionate.

Phase III: Organoleptic evaluation of XOS added Indian traditional foods

(a) Selection of the food products:

i) *Paneer butter masala* ii) *Prawn patia* iii) *Black rice kheer* iv) *Gajar ka halwa*

(b) Standardization of the four selected recipes.

(c) Substitution of sugar with XOS into the four food products at 5gms, 8gms and 10gms.

(d) Sensory evaluation by semi-trained panel members.