Efficacy of Kfibre™ in combating Gastroesophageal Reflux Disease-

Pilot Human Clinical Study

Background:

K-fibre™ is produced in Australia by KFSU Ltd from sugar cane as a whole cane product from which most of the sugar has been removed by water washing. It therefore represent a fairly unique product being a low sugar natural plant fibre being insoluble but modified in such a way that the fibres can be fermented by intestinal flora. It is sold under the trade name PhytocelTM as a functional ingredient into a variety of food application such as processed meats, gluten free baking and as food fibre for health applications.

Informal observations of KFSU customers indicated that of K-fibre™ was effective in controlling of symptoms in gastroesophageal reflux disease (GORD). There are no similar reports of insoluble fibre being effective for relief of symptoms. Gastroesophageal reflux disease (GORD) is a condition that affects around 20% Australians and causes drastic reduction in quality of life. GORD is symptomatically referred to as heartburn or reflux disease because the acidic stomach content travels backwards towards the oesophagus and the feeling of acidity is the major symptom. There is a large body of evidence to indicate significant morbidity associated with GORD. These include lack of quality sleep, dysphagia, and oesophageal cancer in severe cases. Current treatment for GORD mainly consists of drugs named proton pump inhibitors (PPI). While PPI work well in over half of the GORD patients, there is a refractory group (30%) that needs effective alternative therapies.

This pilot human clinical study is proposed to document impacts of Kfibre on gastroesophageal reflux disease and associated heartburn or indigestion symptoms .

Aims:

- To determine if Kfibre™ can control the symptoms of medically diagnosed GERD
- To publish the results to enable independent review and reference to the health properties and thus validate any further investment costs for future larger or multiple human studies that would be needed for a formal health benefit claim to be made

Approach:

In order to test an alternative GORD treatment, a clinical trial will be conducted using K-fibre™ compared to a placebo of insoluble crystalline cellulose, as used as a excipient in the manufacture of pills. The study will be conducted in Launceston at First Point Health Care managed by Dr Jehan Philips. A Research Associate will be employed to undertake the organisation of the trials and collection and collation of results.

Eligibility:

Both Male and Female ages 18 Years to 75 Years

Inclusion Criteria:

- Male or Female
- Ages 18-75
- Heartburn and/or regurgitation at least 3 times a week during the 7 day run- in period prior to randomization.
- Able to read, understand, and complete study questionnaires and record
- Able to understand the study procedures and sign informed consent
- Able to comply with all study requirements

Exclusion Criteria:

- Subjects with Barrett's esophagus, non-erosive reflux disease, EE grades A or B, or peptic stricture on endoscopy
- Subjects with previous upper gastrointestinal surgery
- Subjects with clinically significant underlying comorbidity
- Helicobacter pylori positive
- Clinically significant GI bleed within the last 3 months
- Esophagitis not related to acid reflux
- Bleeding disorder
- Zollinger-Ellison, achalasia,esophageal varices, duodenal/gastric ulcer, upper gastrointestinal malignancy
- Women pregnant or lactating

Methodology:

Study Population:

- Males and Females, 18-75 years
- Heartburn with and without regurgitation
- Haven’t taken antacid or PPI for the last 2 weeks

Sample size:

A pilot study does not need a sample size calculation as its purpose is to provide data on which a larger trial can be planned.

Medical centre:

The study will be conducted at Newstead medical centre managed by Dr Jehan Phillip. The estimated case numbers for GERD without PPI/antacid for 2 weeks will be around 30 per month. Hence, it will require around 3 months to conduct the study.

Recruitment questionnaire:

Patients will be enrolled in the study while attending the clinic. Patients with self-reported GORD will be administered a GORD-HRQL (health related Quality of Life) and questionnaire and if they score less than 3 will be offered enrolment in the study. In other words, people with **mild to moderate** heartburn will be enrolled. All patients will be given information on the study as per the Ethics Application.

Exclusion criteria listed above will be strictly implemented.

Treatment:

Patients will be assigned into Treatment Groups. The study will be double blind with neither the patient or the Doctor and staff administering the study knowing which people are receiving the treatment or placebo control.

All patients will be given a 150 gm container of test insoluble fibre or placebo with instructions on use. Patients will be instructed to stir one heaped teaspoon into a glass of water in the morning after food and to drink it immediately in suspended form. After 3 weeks treatment patients will return to the Clinic for assessment and be requested to return the unused portion of the fibre to validate consumption. Patients should continue to administer the dose until assessed by the GP.

Timetable:

Group 1: K-fibre (3g/day) and Group2: cellulose placebo (3g/day)

Day 1: Informed consent- Age, sex, smoking status, medical history, BMI and vital signs.

At enrolment validated GORD-HRQL questionnaire will be administered by the participating GP. It has both composite score plus individual symptoms assessment (nine questions reported in a scale of 0 to 5). The overall score will be a maximum of 75 (the higher the score, the more the severity of GORD). The total time required to administer the questionnaire would be 1-2 minutes. The questionnaire has been designed to get specific data about heartburn through heartburn score (maximum of 30) and regurgitation through regurgitation score (maximum 30).

Day 20: After 3 weeks treatment the validated GORD-HRQL questionnaire will be administered again by the participating GP.

At the conclusion of the study the Research team will analyse the GORD-HRQL questionnaire data and correlate treatments against symptom scores.

Adverse events:

Contraindication/risks for oral fibre intake

There has been no report of risk associated with this fibre intake but the following conditions can be considered as risks of the oral fibre intake,

Conditions:

- Blocked Bowels with Decreased Peristaltic Movement

- Stool Blockage of the Intestine
- Stomach or Intestine Blockage

However, in the event of any unexpected adverse event, doctor in-charge of the clinical centre where the study is conducted (Dr Phillips) will be available to provide the treatment for the participant

All adverse events will be recorded and GP has the right to terminate the study based on the assessment of severity.

Statistical Analysis:

All results will be expressed as means ± SD. Statistical test will include unpaired student t-test or Mann-Whitney U test, with $p<0.05$ regarded as significant.

Publication:

As a novel application of insoluble fibre of interest to the functional foods and the medical industries the results will be published in peer reviewed literature. KFSU will be able to delay publication for up to 6 months for any IP protection required. It is recommended, in line with University policy) that Open Access publication be funded.