Iron (Fe) deficiency anaemia is a condition in which blood lacks adequate healthy red blood cells (RBCs) which carry oxygen to the body’s tissues. It affects more women than men and is common during adolescence and pregnancy leading to several health problems. Fe deficiency in adolescent girls is an important component of the continuous cycle of malnutrition.

The human gut harbors trillions of microbes that helps in efficient absorption of nutrients from food. Absence of these beneficial microbes can severely affect iron absorption in humans even in the presence of adequate iron in diet. Administration of iron tablets leave excessive amounts of unabsorbed iron in the gut which causes unappreciated side effects.

Our Approach:
To use practical food-based solution using biofortified crops rich in iron and dietary fibers that have been shown to improve the gut microbiome composition, to achieve overall iron homeostasis in adolescent girls with mild to moderate iron deficiency.

Project Goals:
• To determine the effect of national IFA supplementation programme on hemoglobin improvement and gut microbiota modulation in anemic adolescent girls.
• Effect of peanut-pearl millet (biofortified for iron) bar supplementation rich in dietary fibers and iron on gut microbiota health and iron status among anaemic adolescent girls.
**Project 1:** Effect of National IFA Supplementation Programme on Gut Modulation and iron status among adolescents

**Project 2:** Efficacy of peanut-pearl millet bar supplementation on gut microbiota health and iron status among anaemic adolescent girls

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**Strategy**

- **Project 1: Iron-Folic acid supplementation (3 months)**
  - Cohort selection: 16-19 yrs
  - Data generation:
    - Physiological parameters
    - Blood samples
    - Faecal samples
  - Sample Collection:
    - Normal (12-15.5g/dl)
    - Mild anaemic (11-11.9g/dl)
    - Moderate anaemic (8-10.9g/dl)

- **Project 2: Peanut-pearl millet bar supplementation (3 months)**
  - Student Welfare Hostels, Hyderabad
  - 60 NORMAL subjects
  - 60 MILD subjects
  - 60 MODERATE subjects
  - Whole Metagenome Sequencing using Illumina Next Generation Sequencing platform

**Expected Outcomes**

- Unravel the impact of Fe supplementation on iron status and overall health
- Scientific evidences on the role of gut microbiome in improving Fe absorption
- Establish sustainable diet-based approaches for more effective Fe supplementation

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