INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study	:	**Ph.D.**

Thesis Title: **Assessment of Antioxidant Potential of Four Selected Leafy Vegetables and Development of Herbal Drinks for Intestinal Health**

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SHORT ABSTRACT

This Ph.D. thesis focuses on finding dietary interventions against lifestyle diseases related to the gastrointestinal tract by developing a product strategy using leafy vegetables with physiologically relevant antioxidant and prebiotic activity. The study documents 310 leafy vegetables, their nutrients, bioactive components, culinary usage, and health benefits from ethnobotanical surveys. Perceptive health benefits recorded in surveys are translated into a universally accepted code for specific leafy vegetables to claim curative/preventive potential for certain disorders. While some leafy vegetables show potential against oxidative stress-related gastrointestinal diseases, further validation is needed. The study also analyzes polyphenol concentrations, indicating potential local effects in the intestines. Leaf-polysaccharides and oligosaccharides from leafy vegetables are explored for prebiotic and antioxidant activity. Herbal decoctions and infusions are suggested as effective ways to deliver bioactive compounds with health benefits. The thesis also develops effective cell level antioxidant assays and validates antioxidant-rich beverages from selected herbs. Sensory evaluation and storage conditions for the beverages are explored. Two ready-to-serve beverages developed from *Centella asiatica* and are studied for antioxidant and prebiotic properties, revealing multiple mechanisms to combat oxidative stress and promote gastrointestinal health. This research provides valuable insights into using natural products to combat lifestyle diseases and enhance overall well-being.