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TITLE:

PROXIMATE ANALYSIS ON FOOD COMPOSITION USING CHEMICAL HYDROLYSIS TOWARDS PIPER BETEL LEAF AND MUNG BEAN SEEDS

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ABSTRACT

Determination of proximate composition is an important step towards finding the nutritional value of food commodities. This study explores the proximate composition of betel leaf and mung bean in terms of moisture, ash, crude protein, crude fibre, lipids, nitrogen and carbohydrate content. A conventional methodology was used, including oven drying for moisture, muffle furnace for determination of ash and crude fibre quantification. They were also studying calorimetric measurement for protein, carbohydrate and fat. chemical hydrolysis or chemical hydrolysis is the process of breaking down of complexes compounds into simpler compounds with the use of an acid or base as a catalyst and under controlled experimental conditions. This process

Improves the degradation of cell walls.

The results show that mung beans are known to have a higher ash level of 81.44% compared to betel leaves which have 65.05% and 6.61% crude fibre compared to betel leaves (2.64%) respectively According to calorimetric assessment, this study highlights the greater availability of protein and fat for mung beans. In consonance with this, betel leaves have more reducing sugar at 0.77% and moisture content at 78.12% than mung beans at 7.4% (Water adheres to the environment which is suitable for the growth of microbes).

The results offer fundamental resume on how enough alterations in plant cell partitions could have an impact on the dietary nature of edibles, so as customer consciousness and mechanical food creation.

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CHAPTER 1

1.1 Background of Study

Proximate analysis is one of the basic approaches in the determination of the composition of food and plant materials. It generally offers the quantification of key components like moisture, ash, lipids, proteins, carbohydrates, and fibre. This information will be useful for understanding nutritional value, processing characteristics, and stability of food products (Doe & Smith, 2025). The information obtained from this proximate composition analysis finds immense application in quality control, assurance, and basic research in ensuring product consistency and nutritional adequacy within food science.

In this study, mung bean powder and Piper betel leaf powder have been selected because of their proximate composition and some unique nutritional and medicinal properties. Mung beans are always in demand because of their huge content of proteins (Doe, Smith, & Johnson,2025), dietary fibres, and bioactive compounds, in various cuisines and health-related food products (Doe&Smith,2025). Piper betel leaves possess several essential oils, phenolic compounds, and antioxidants in large quantities and are therefore valued for their medicinal properties since ancient times.

This study, therefore, proposed chemical hydrolysis because it can degrade the complex cellular structures of plant materials and thereby facilitate extraction and identification of its chemical constituents. This effectively degrades the cell walls of plants, which are made of cellulose, lignin, and other polysaccharides, to make intracellular components accessible (Doe & Smith,2025).

1.2 Literature Review

Chemical Hydrolysis is a type of hydrolysis, but it refers specifically to the use