CHAPTER 1 INTRODUCTION

1.1 Background

Plants are very important commercial source of chemical compounds including primary and secondary metabolites. Higher plants have been used as sources of drugs to combat diseases for several thousand years. However, there has been renewed scientific interest in plant extracts and their constituents for health care during the past two decades. Our remote ancestors may have observed wild animals to discover plants species that could be used for food, others that should be avoided, and perhaps some that cure sickness (Monika Christina, 2014).

This shift from synthetic chemical agents to plant-based products is primarily due to the frequent untoward effects seen with synthetic chemical agents. In addition, under different stress conditions the body requires additional vitamins and/or minerals, which need to be supplemented in the diet (Halliwell, Gutteridge, 1992). Supplementation not only helps to overcome nutrient depletion but also decreases the risk for chronic diseases, with the added advantage of considerably reduced health costs (Meydani *et al.*, 1998).

Plants have always been an exemplary source of drugs. Many of the modern drugs that are currently available have also been derived directly or indirectly from herbal sources. Herbal medicines have been proved to be highly effective, economical and safe alternative tools for the treatment of various human diseases (Kirtikar and Basu, 1975).

Several medicinal plants have been used as dietary adjunct and in the treatment of numerous diseases without proper knowledge of their function and toxicity. According to the World Health Organization about 80% of the world's

population living in developing countries relies essentially on plants for primary health care so herbal medicine associated pharmacology and pharmaceutical products are required to update frequently (McKay, 2007).

Phyllanthus fraternus is an ancient Indian traditional medicine used for treatment of several human diseases including hepatic and renal disorders. It belongs to the Euphorbiaceous family in plant division and an annual herb, distributed in India, Pakistan, South Arabia, Africa, Indonesia, and Malaysia (Abedin *et al*., 2001). It is also widely used as a folklore remedy for the treatment of various diseases of liver by traditional healers and tribal people (Kirtikar and Basu, 1975).

Toxicity is the fundamental science of poisons. The organization for Economic and Development (OEDC) mention acute toxicity as the advance effect occurring within a short time of oral administration of a simple dose of a substance or a multiple doses given within 24 hours (OECD Guideline, 1999) Phychochemical interaction of poisons lead to injury or death of living tissue. Toxicology is like science and art like medicine. It includes observation data gathering and data utilization to predict outcome of exposure in human and animals. The ancient humans categorized some plants as harmful and some as safe (Godhawani, 1987).

So that, by prescribed the data from previous researches, this research in purpose to analyse the effect of *Phyllanthus fraternus* using as feed supplement for albino mice and monitor the liver health. Which furthermore it can be used as consideration to animal feed additive that promotes health benefits.

1.2 Identification of Problem

1. Whether by increasing the meniran plant *Phyllanthus fraternus* ratio in the feed of albino mice will affect the body weight gain of the animal?
2. Whether by giving higher concentration of Meniran plant *Phyllanthus fraternus* ratio in the feed of albino mice will affect the condition of the Serum Glutamic Oxaloacetic Transaminase (SGOT) and Serum Glutamic Pyruvic Transaminase (SGPT)?

1.3 Theoretical Base

The plant extracts are used for treating many types of biliary and urinary conditions like gall bladder, kidney stones, and bacterial infections such as cystitis, prostatitis, viral infections, hepatitis, flu, tuberculosis, liver diseases, anaemia, venereal diseases, and urinary tract infections (Chanda, 2011). The antimicrobial property of *Phyllanthus fraternus* has been reported by (Chanda, 2011). The aqueous extract of the plant shows antioxidant property (Sailaja, 2006) and has protective effect against bromobenzene induced mitochondrial dysfunction. Also the extract can reduce toxicity of drugs such as cisplatin and cyclophosphamide and therefore can be used to raise the therapeutic potential of anticancer drugs (Koffuor, 2011).

Liver function tests are one of the blood tests that are most commonly performed to assess the function of the liver or injury caused to the liver. Liver damage is detected initially by performing a simple blood test that determines the level of various liver enzymes present in the blood. The most widely used liver enzymes that are sensitive to abnormalities in liver and are most commonly

measured are the aminotransferases. The two aminotransferases that are checked are the alanine aminotransferase (ALT or SGPT) and aspartate aminotransferase (AST or SGOT). These liver enzymes form a major constituent of the liver cells. They are present in lesser concentration in the muscle cells. When the liver cells get damaged or injured, these enzymes seep into the blood stream, raising their blood levels. Hence raised blood levels of SGOT and SGPT signifies liver disease or injury (Lee, 2009).

The aminotransferases catalyse the chemical reactions involving the amino acids, where an amino group is transferred from the donor amino acid to the recipient molecule. Aminotransferases are also referred to as transaminases. Another name for AST is Serum Glutamic Oxaloacetic Transaminase (SGOT). Similarly another name for ALT is Serum Glutamic Pyruvic Transaminase (SGPT). Hence, AST is also referred to as SGOT and ALT is also referred to as SGPT.

Serum Glutamic Oxaloacetic Transaminase is normally present in a number of tissues such as heart, liver, muscle, brain and kidney. It is released into the blood stream whenever any of these tissues gets damaged. For instance, blood AST level is increased in conditions of muscle injury and heart attacks. Hence, it is not highly specific liver tissue damage indicator as it can be elevated in conditions other than liver damage.

By contrast, SGPT is normally present in large concentrations in the liver. Hence, due to liver damage its level in the blood rises, thereby, serving as a specific indicator for liver injury.

1.4 Aim of Research

1. To monitor the growth rate of the albino mice after feeding *Phyllanthus fraternus* as a supplement.
2. The purpose of this research is to know the effect of *Phyllanthus fraternus* as a supplement feed for albino mice.

1.5 Outcome of Research

The outcome of this research is to give information to the feed manufacture that meniran plant *Phyllanthus Fraternus* can be used as a supplement for rodent feed which have health benefits. It is also expected to give choice for the consumers who are buying the feed for their rodent.

1.6 Hypothesis

1. By giving higher concentration of meniran plant *Phyllanthus fraternus* ratio in the feed of albino mice the body weight gain of the animal will be expected to increase.
2. By giving higher concentration of meniran plant *Phyllanthus fraternus* ratio in the feed of albino mice it is expected to produce a normal test result for SGOT and SGPT test.