

Chapter 10

Herbal Medicine and Plants in the Treatment of Leukemia

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ABSTRACT

Herbs and derived medicines are traditionally practiced in many regions worldwide. The components present in the plant are known as secondary metabolites that have many effective properties against several diseases. Herbal medicines are the complex of the components of the herbs that are prepared and used in alleviating infections in the diseases. Leukemia is a type of blood cancer that develops in the blood-forming tissues such as bone marrow and is found to be in forms such as lymphocytic leukemia and myeloid leukemia. This blood-related disorder develops in the blood-forming tissues by the accumulation of improperly differentiated cells and may spread to other related areas in treatment delay. The conventional treatment for this disease is effective but at a cost. So herbal medicines can be one of the effective treatments for leukemia. Therefore, the following chapter is going to be about the herbs and herbal medicine and its usage for leukemia. It will also focus on the medicinal properties such as apoptotic, anti-inflammation, and others, and their future perspectives.

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1. INTRODUCTION

Herbs are the plants, which are defined to be small seed bearing without a woody stem. These plants are one of the important components that are often been used in the diet of human beings, contained with medicinal importance and are used for these effects worldwide. These medicinal plants contained with certain compounds known as secondary metabolites which are produced in several plant parts in response to the environmental effects for safety from the predators. These secondary metabolites are the phenolic compounds belong to the groups of flavonoids, alkaloids, phytosterols, terpenoids, anthraquinones, quinones, anthocyanin and others which have medicinal properties. Due to the medicinal properties, these compounds are being studied against different diseases for recognizing the compounds and understanding the way these compounds work in alleviating the symptoms. The study of these compounds are carried out by preparing extracts from the plants in which these compounds are perceived and are studied sole or in composition with other plants. Herbal formulation is a composition of different plants extracts which are the popular remedies for vast populations worldwide for different diseases, and considered to be safe for use (Kuruvilla, 2002). These are traditional medicines that have their existence since a long time before development of the modern medicines and have been still used by 70-80% populations. These formulations are synthesis of remedy by generations of experienced physicians. The use of these formulations is being recorded in the ancient text of the Indian, Chinese, Greek, Roman and Syria. The ancient Indian text Rigveda, Athravaveda, Charak Samhita and Sushruta are records of the use of these formulations (Pal and Shukla, 2003). Extracts of herbal plants used in Ayurveda, Charaka Samhita and Susruta Samhita and other compounds derived from the plant's parts like flowers, leaves, roots, bark, and stem with good dietary supplements have wide range of application in alleviating both infectious and non-infectious disease, many medicinal plants are explored which are found to be fatal against infections caused by virus. Due to advancing in the technologies most of the plants with the medicinal properties have gained attention in the state of emergence against viral infections (Ganjhu et al. 2015). These medicines can be consumed in the form of pills, powders, tinctures, tea, gels, lotions, creams or can be added in the bath water.

2. LEUKEMIA

Leukemia also known as blood cancer develops in the tissues where formation of blood cells takes place that includes bone marrow and lymphatic system (**Figure 1**), it is the top 10 cancer which is responsible for the cause of many deaths worldwide. This malignancy involves the abnormalities of white blood cells, which without any abnormalities are infection fighters and grow and divide orderly way as the need of the body. Some of the symptoms of these blood related malignancies are fever, fatigue, severe infections, losing weight, swollen lymph nodes, easy bleeding, and others. The development of this disease occurs in the spongy tissue in the bone marrow in the bone cavity where blood cells are produced from the hematopoietic stem cells that derives to myeloid cell and lymphoid cells. Based on the cell type leukemia can be classified into myeloid leukemia that develops in the myeloid cells and lymphocytic leukemia that develops in the lymphoid cells, based on progression it can be classified into two types acute leukemia in which the progression is fast and chronic leukemia in which the progression and propagation is slow. There are four types of leukemia, Acute myeloid leukemia (AML), Chronic myeloid leukemia (CML), Acute lymphoblastic leukemia (ALL) and, Chronic lymphoblastic leukemia

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