

Abstract

Studies have confirmed that heritable phenotypic variation in plants does not necessarily need to be based on the DNA sequence. Epigenetic studies have shown that the genomic DNA sequence might remain the same while gene expression changed by environmental conditions. This results in different morphologies and diverse chemical products from same species of a plant. Thus, in this paper we highlight that the herbal medicine industry should always be considering the habitat of a plant and its growing conditions as it does affect the pharmacological potency of the metabolites produced. The various aspects studied in this paper show that there is a need of optimizing the production sites of herbal medicinal plants because ecological factors influence epigenetic gene expression changes. This eventually affects the quality, quantity and efficacy of the secondary metabolites or drugs synthesized by the plants. Traditional herbalists have learnt this phenomenon by experience. Therefore, the value and exploitation of herbal medicine for modern human maladies shall greatly benefit by understanding the ecological influence of epigenetic mechanisms on medicinal potency.